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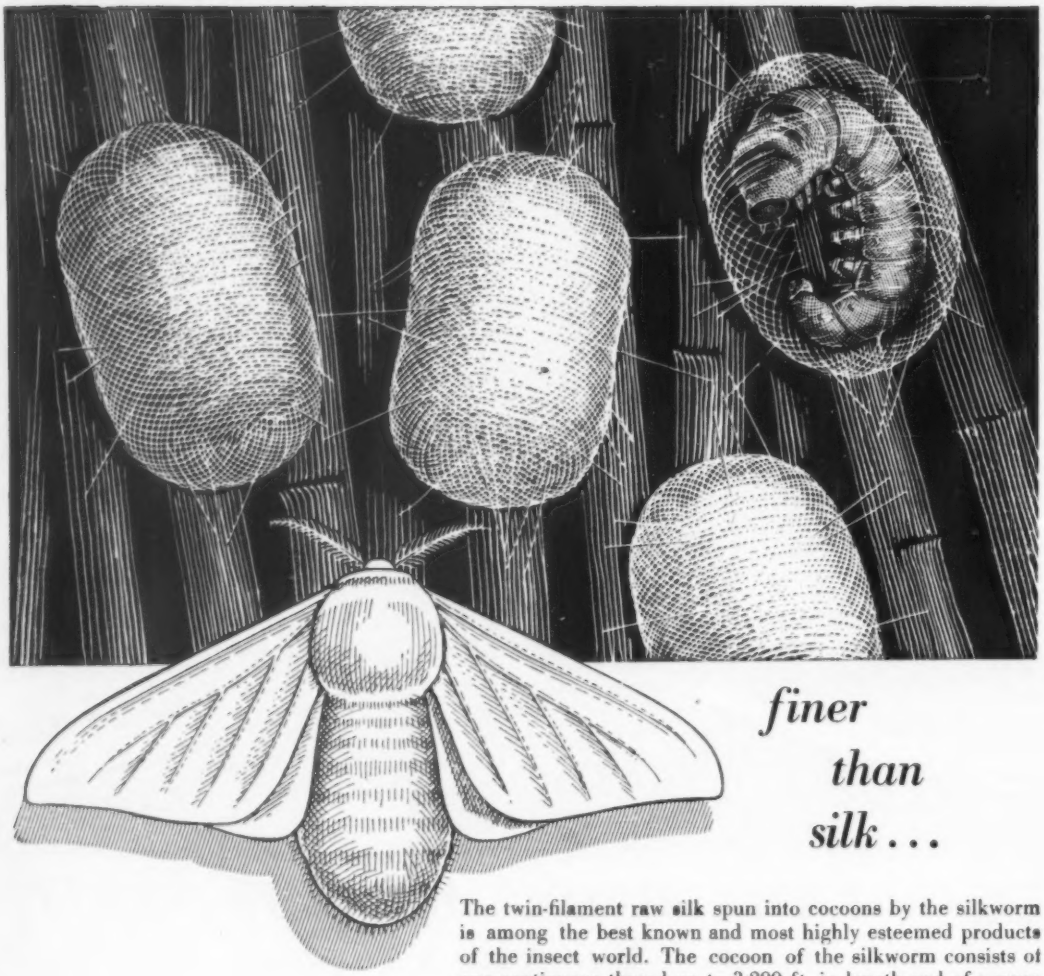

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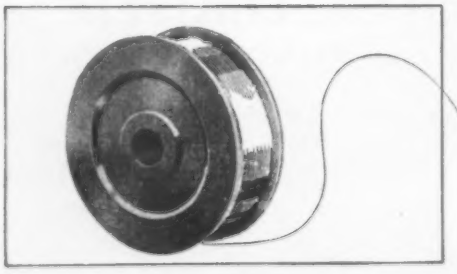

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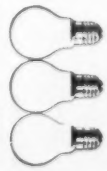

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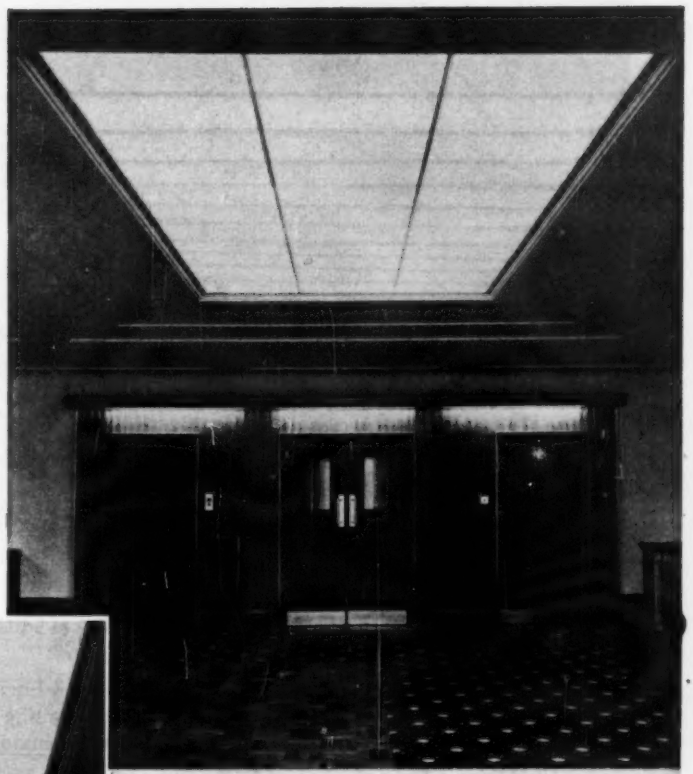

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Light and Lighting

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How Others Do It

FIELDS of lighting are world-wide and it is always interesting, besides being important, for us in our part of the world to know something of lighting as other countries are doing it. So, again, we present an international random review of lighting which—although it cannot be exhaustive—will, we hope, give a synoptic view of lighting practice abroad. All countries should be busy this year in putting together information concerning national developments in the various fields of lighting because, next year, the International Commission on Illumination meets once more for the exchange of this information and the discussion of current problems of lighting and vision. What a great change in the distribution of attention to matters of lighting has come about during the 50 years in which this journal has been disseminating information about, and promoting interest in, this very important subject. The International Commission itself has come into being during this period and, to-day, it has a membership of about 40 countries covering most of the habitable globe. We in this country have something to learn from others about applied lighting and, of course, much valuable research about light and lighting is going on in many countries besides our own.

Notes and News

CENTENARIES do not happen very often and when they do they are worth some notice. During the previous month the centenary of Siemens Brothers has been celebrated and this journal would add its congratulations to the many that the company has already received from all parts of the world.

When the firm was founded in 1858 by William Siemens, a young man with considerable ability, foresight and enthusiasm, electricity was nothing more than a subject of curiosity and experiment—many things we now take for granted were undreamed of. Long before they reached their centenary Siemens had achieved an outstanding international reputation in the fields of production, distribution and utilisation of electricity. Their greatest achievement is probably in the field of communications and Siemens cables have no doubt girdled the earth.

But to the lighting man the name of Siemens immediately brings to mind the output of that small group of people at the Preston research laboratories led by one of the most respected and popular men in the lighting industry, Dr. J. N. Aldington. Dr. Aldington joined Siemens Brothers Lamp Works in 1923 as a junior chemist; he is now Chairman of Siemens Brothers and Group Managing Director of the fairly recently formed company of Siemens Edison Swan. (Incidentally we wonder if any other company is known by such a wonderful combination of famous names.)

Dr. Aldington naturally had much to do with the centenary celebrations and on March 5 he delivered a Centenary Lecture before an audience of 2,400 at the Central Hall, Westminster. This was without doubt the finest lecture we have ever heard and the demonstration surpassed even the very high standard that is associated with the lecturer. In about two hours Dr. Aldington surveyed electrical engineering developments during the last 100 years dealing in particular with communications, power and light. It would be impossible adequately to describe such a lecture in a short summary so we will not attempt to do so. But some indication of the type of demonstration with which the lecture was illustrated is given by mentioning that at the end of a description of the transatlantic telephone cable and all that goes with it a well-timed telephone call was taken on the stage by the lecturer from a colleague in Winnipeg; a good bit of stage management.

An exhibition on the life and works of Sir William Siemens which was on view in the foyer of the Central Hall is now in the Science Museum at South Kensington.

On the day following the lecture a Centenary Dinner was held at Grosvenor House. Among the 1,200 guests were representatives of government, industry and commerce, representatives of the various branches of the company and many past and present employees with long service to their credit.

Once again congratulations to Siemens on its centenary and to Dr. Aldington and his colleagues on the way it was celebrated and best wishes for the future.

The World of a Colour Blind

Members of the Physical Society Colour Group, meeting at the Institute of Ophthalmology on March 5, were shown a very interesting film purporting to reproduce the appearance of familiar scenes and objects as viewed by anyone with defective colour vision. The film had been made in the United States under the direction of Cmdr. Farnsworth, of the U.S. Naval Research Establishment, who is at present in this country as a scientific liaison officer. He gave a most entertaining description of the way in which the film had been produced on the basis of the predictions made in his laboratory as to the colours seen by a dichromat, i.e., a subject for whom all colours can be matched by a mixture of two suitably chosen colours, instead of the three necessary for the normal observer. To check the validity of these predictions, the film was shown to an observer with a very rare condition, *viz.*, normal vision in one eye and dichromatic vision in the other. A number of shots of a sitting room with variously coloured decorations and furniture, and a tastefully dressed model, showed how the colours appeared, first to a normal observer and then to each of the three kinds of dichromats. The appearance of the colour triangle to each kind of colour defective subject was also shown.

During the discussion Cmdr. Farnsworth was asked whether the film could be made available for demonstration and teaching. His reply was encouraging and it appeared that there was every likelihood of its being possible, in due course, to procure copies for such purposes, if application was made to the proper authorities in the United States through the Colour Group.

Street Lighting Columns

That veteran actor A. E. Matthews naturally achieved plenty of publicity for his sit-down strike against the erection of a concrete column outside his house at Bushey. Concrete columns have been fair game for a long time now and a protest such as that staged by Mr. Matthews is bound to hit the headlines. It was a brave effort by a man of 88 to sit over the hole so that the column couldn't be erected, particularly during a spell of arctic weather.

During a TV interview with Mr. Matthews on the site a brief glimpse, a very brief one of only a second or two, was given of what one assumed to be the type of column to which he so strongly objected. His objection (for the benefit of those who might not know) was having a 'monstrosity' of a concrete column right outside his 300-year-old house. If the column shown was really the type of thing going up at Bushey then we can sympathise with Mr. Matthews, for we doubt very much whether it is of a design currently approved by the Council of Industrial Design. One sees plenty of columns going up which cannot possibly be modern approved designs. How do they come to be erected when better designs are available? Are the manufacturers still making them, or are there still stocks waiting to be used up? The only thing that is clear is that local authorities are still erecting them.

Sir Gordon Russell had quite a bit to say about street lighting columns when he spoke recently to the Institution of Municipal Engineers on civic design in streets. Lighting columns were by no means the only thing with which he was concerned; he listed overhead cables, telegraph posts and wires, telephone kiosks, police call-boxes, sand bins, litter bins, bus stop notices, bus shelters, sign-posts, NO ENTRY and other traffic signs, bollards, lighting columns, Belisha beacons, zebra crossings, cat's-eyes, street names—to name but a few. Of these, lighting columns probably get more criticism than the remainder put together. What, said Sir Gordon, have we against the way in which the problem is handled today? He suggested (1) the dreariness and in many cases sheer ugliness of designs; (2) the lack of architectural quality of lighting columns by daylight; (3) lack of co-ordination of lighting columns, bollards, telephone kiosks, police call-boxes, sand bins, bus shelters, litter bins and other street furniture; (4) in lighting standards, the lack of co-ordination of column and lamp; (5) the scale of many items being too large for small streets; (6) little attempt being made to relate the growing number of directions, notices, street and town names, etc., on and over pavements, on buildings and on roads, and to ensure that they are distinct from shop names, etc.; (7) the sky is the only natural feature that is readily available to city dwellers—is it reasonable to carve it up like cheese into odd shaped pieces by overhead cables?

The problem, he said, was first to redesign these things in such a way that they will be not only efficient and economical to produce but to have a real sense of style and to fit naturally into the street background. Since the war a considerable effort has been made to improve the situation and manufacturers of lighting columns, for example, were to be congratulated. The main difficulty now, as far as he could see it, was that the best of designs which have been achieved with much blood and sweat may never be seen by the public because they cost a few shillings more than second-rate ones and Ministry of Transport grants are based on the lowest tender.

Well said, Sir Gordon—and we hope your faith in the strong sense of public duty in such matters will be justified. Obviously Sir Gordon has an ally in Mr. Matthews. Let us at least hope that public lighting engineers do not inflict upon us obsolete designs for the sake of saving a few shillings in capital cost.

The Return of Son et Lumiere

The *Daily Telegraph* was apparently pleased with the success of its venture on *son et lumiere* at Greenwich last summer as it announces a forthcoming attraction to take place in the grounds of Cardiff Castle. This new show will probably open about mid-July during the course of the Empire Games which are to be held in that city, and will continue throughout August and September. This show will be a British effort with technical services provided by Thorn Electrical and E.M.I. Ltd.

Manufacturers' Literature

Though lighting people can always find some harsh things to say about architects, they must at least sympathise with them in their task of trying to keep up to date with developments in the innumerable things that go into modern buildings. One way in which manufacturers can help architects, and themselves, is in the presentation of their trade and technical literature. Last year the RIBA and Building Centre jointly organised a competition in which two lighting firms (Troughton & Young and Falks) had some success. Details of the 1958 competition have just been announced, and can be obtained from the Building Centre. The closing date is October 31. One or two of the lighting firms have published some very good catalogues recently (the "Atlas" one deserves a special mention). We hope these will be entered for the competition and that one of them comes out at the top.

The staircase well of the new Siemens-Electrogerate building in Munich.

An INTERNATIONAL REVIEW

of lighting progress in 1957

The aim of this annual review is to give a brief, though it is hoped reasonably balanced, account of progress in the development and application of lighting equipment. Sections are included on light sources and luminaires, but the main interest is provided by the many illustrations of lighting installations. Some 17 countries have contributed information and illustrations for this review; the Editor would be pleased to receive similar details and pictures of installations from the other 40 countries where "Light and Lighting" is read.

LAMPS AND LUMINAIRES (a term which covers everything from a simple metal spinning to a luminous ceiling) are the necessary tools of the lighting installation designer. Most of the latter have the lamps at their disposal for even the latest development seems to penetrate to the ends of the earth with surprising rapidity. Suitable luminaires are another matter; some countries have inspired designers, others just copy with varying but usually disastrous results.

Fittings designers are determined not to be beaten by the fluorescent lamp and new designs appear almost every day. The current tendency would appear to be to hide as much as possible of the lamp and fitting in the ceiling. This is apparent in Britain and further examples are forthcoming from the United States, Italy and Germany. It is not, however, always possible to recess the luminaire completely—either because the ceiling is not deep enough or because of the presence of other services. For use where these difficulties occur some very successful shallow luminaires have been produced. The increasing use of acoustic and/or heated ceilings is, of course, creating a demand for luminaires of this type.

Fittings makers in Australia are now having to face the problem of designing luminaires for the 5-ft. fluorescent lamp. When the lamp-makers in that country began to make fluorescent lamps they standardised on the 4-ft. version, but having now decided to make the 5-ft. lamp, the fittings makers will have to produce something to clothe it.

What might be a useful development in connection with fluorescent lamps is reported from Germany, where the 40-watt lamp is now available with translucent caps. Used with transparent lamp-holders, this type of lamp helps to reduce the dark zone at the ends of luminaires.

Luminous ceilings in one form or another continue to be popular and they turn up in all kinds of shapes in all kinds of places. In an effort to reduce installation costs by avoiding the complications of exact fits and finishes but still giving very nearly the same level of illumination, the "rug type" luminous ceiling has been introduced in the United States. This type of ceiling, which is available in standard sizes or modules, stops short of the walls; just as a customer who cannot afford a fitted carpet would buy a standard size carpet to fit the floor so may he now buy a standard rug-size luminous ceiling to fit into the available ceiling space. (See page 160.)

Wakefield's in the United States have even brought this type of ceiling into the home. Their "Sunshine Ceiling" is a 4 ft. x 6 ft. plastic ceiling for standard bathrooms (5 ft. x 7 ft. or 5 ft. x 8 ft. in the United States). The whole ceiling is pre-assembled in one package and weighs no more than 40 lb. Light is provided by six 75-watt tungsten filament lamps which, when white panels are used in a light coloured bathroom, give about 45 lm/ft^2. Sunshine in the bathroom on a dull winter morning sounds a good thing with which to start the day. Other versions of luminous ceilings are also to be found in American houses.

An American ceiling with which any shape, size or variation can be built up to cover the whole ceiling or only part of it is the Wakefield Ceiling '58. It consists

of 2-ft.-square plastic diffusers and louvres (available in a range of styles, patterns, texture, colour and materials) held on aluminium supports. It is claimed that both the design of the lighting scheme and its installation are made very much easier. This type of ceiling is also available in Britain, where it is known as the "Modulume."

In some of the installations shown in this review one might have expected cold cathode lamps to have been used rather than hot cathode bearing in mind the longer life of the former and the apparent (from the photographs) maintenance difficulties of the installations. In this connection we gather that the high frequency-high voltage system in the United States which was described in our October, 1956, issue is still going very strong and that since it went into operation in February, 1956, there have been only two lamp failures.

The tungsten filament lamp still provides the designer with plenty of scope and there is no end to the variations that can be produced. The materials used for tungsten lamp luminaires depend on what is available in the country of origin. Plastic and spun metal shades seem to hold their own in some countries but glass is perhaps proving the most plastic and adaptable material of all.

Some examples of luminaires are shown in this section of the review; many others will be seen in the pictures of particular installations.

Street Lighting

We cannot point to any outstanding development in street lighting during the past year; progress has been mainly in extending street lighting on more or less conventional lines. Though ordinary mercury, sodium and tungsten lamps are still widely used, interest centres on the increasing use of fluorescent and colour-corrected mercury lamps and in refinements to the lanterns for use with these light sources.

Lack of funds will no doubt for some time limit the power of local authorities to do all they want to do in the way of street lighting but it is interesting to note that some of the smaller country towns in Australia and Italy are tackling the problem with energy and some results. In Buenos Aires, however, ambitious plans for relighting the city with colour-corrected mercury lamps are held up because the lamps have to be imported—and lamps for street lighting rank fairly low in the list of other things which have to come from abroad. In Madrid economic help is given by industrial and commercial firms who consider that a well lighted street is an aid to business. The public lighting in the new satellite towns around Madrid is also carried out with the economic collaboration of interested parties.

In Denmark the reflector type fluorescent tube has been used in semi-cut-off fittings resulting in a useful increase in illumination on and brightness of the road surface.

The slim fluorescent lamp lanterns of which one or two German examples are shown certainly look better than the more bulky lanterns which are used in Britain. The light output from two 65-watt lamps can, however, hardly compare with that from three or four 80-watt lamps; the spacing to give the same lighting results must therefore be much less and the number of columns much greater. The photograph on page 142 shows an installation of this type of lantern on the slim type of column which is also very common in Germany though in this particular case the great height of the columns (31 ft.) and the long curving overhang seems to make the street lighting installation too conspicuous.

The ingenious lanterns for use with colour-corrected mercury lamps are also worthy of notice.

Floodlighting

An interesting floodlighting installation is that of the Villa d'Este fountains at the Tivoli in Rome where only underwater floodlights are used. Photographs of fountains in play can never give the true effect but the sight of the innumerable fountains of the Villa at night is very impressive.

Parisians, of course, love floodlighting (as those who were present at the 1948 CIE meeting in Paris will remember). It sends them—sends them into the boulevards, into the Champs-Elysées and on to the quais by their tens of thousands. This is what happened again when Queen Elizabeth paid her state visit to France during the summer and the whole of Paris was lit up. We reproduce but one picture (page 146) as this gives a fairly good idea of what the city looked like.

From Madrid, where floodlighting is considered to be as important as street lighting as a permanent rather than temporary means of beautifying the city at night, plans are announced for an ambitious development of the "sound and light" spectacle. At the Fontaines open-air theatre in the Retiro park it is proposed to put on sound and light and illuminated fountains and to produce different types of live theatrical performances and concerts —including ballet on ice.

Though not quite "floodlighting" but seeing that we have included "sound and light" we would also mention an outdoor performance of "Carmen" at Asheville, N.C. in the United States. The performance was on the 750-ft. porch of a house built about 1890 in the French Renaissance style and the lighting was done with fluorescent lamps.

Also a little removed from floodlighting though connected with it is the external appearance of commercial buildings by night. A number of such buildings have in the past been floodlit but many have no great architectural merit, are not suitable subjects (particularly modern buildings with their large areas of glass), or are not conveniently situated for conventional floodlighting treatment. There is a growing trend to rely on the interior lighting to make the buildings conspicuous at night and in some cases they are designed with this in mind. One such example in a tall building in the United States (of which no pictures are yet available) makes use of luminous ceilings for the first 10 to 15 ft. from the windows which serve the double purpose of producing a striking effect from the outside and also providing graded lighting within the rooms. The picture on page 145 shows the new Siemens building in Munich; the lighting fittings add interest to the staircase well and the unusual structure of the façade gives a pleasant effect of light and shade. Pictures of the interior of the building are given on page 153.

Sports Lighting

The lighting of football fields is again well to the fore, and examples are quoted from Madrid, Lisbon, Milan and Hong Kong.

Cricket gets a mention for the first time, though the

application is one of lamps rather than of lighting. For the current tour of South Africa by the Australians the scoreboard at the Wanderers Ground in Johannesburg was fitted with indicator lamps to provide spectators with immediate information on the progress of the game. Lamps fitted against numbers corresponding with the players' names on the score-card flash on and off as a player handles the ball; red lights indicate the batsman or bowler in operation. To ensure that the lights are visible even when direct sunlight is falling on the board, 150-watt internally silvered spotlights with etched front glasses are used; as the fronts of the lamps protrude slightly from the front of the board they are visible from all parts of the ground. To enable quick replacement of faulty lamps, the lamp housings are made to slide into fixed cylinders from the back; in the event of a failure the complete unit can be changed in a few seconds.

Once again a number of indoor sports lighting installations are included. Of particular interest is that at the Municipal Sports Palace in Barcelona, where 320 500-watt internal reflector lamps in simple metal spinnings arranged in groups of five give an average illumination on the arena of between 60 and 80 lm/ft^2. One would not have expected so many suspended fittings to look so good, but this installation looks just right.

Lighting for Travel

Most forms of travel seem at last to be getting the attention to lighting that they deserve, and lighting for travel is this time given a section to itself.

Railway stations have a reputation for being gloomy places—and the rare exceptions have only emphasised the gloom of the majority. At the new Central Station in Rotterdam an indirect fluorescent system in the main booking hall gives an illumination of 30 lm/ft^2. The picture of the Station Square shows that a railway station can even be made to look inviting. The picture of Pennsylvania Station in New York shows an enormous floating aluminium steel and glass canopy over the service bureau; the canopy is 164 ft. long and projects 43 ft. from the wall. Concealed behind aluminium louvres are 3,200 fluorescent lamps.

Examples are shown of platform lighting in the Oslo underground railway and on the German railways, but one wonders why in the latter case the luminaires are not used to show the name of the station, as is becoming the practice on British Railways.

In Denmark a new system for lighting railway yards is being tried. One disadvantage of high towers is that the light does not penetrate in foggy weather; the new system makes use of ordinary street lighting lanterns mounted at 25 ft., and is stated to give very satisfactory results.

A novel use of fluorescent lamps on the railway is reported from the United States. For the inspection of the underside of carriages a fluorescent floodlight is mounted on the ground between the tracks, thus providing a much higher illumination with a minimum of shadow and more conveniently and cheaply than with conventional tungsten lamp units or portable lanterns.

Two contributions in the search for infallible aids for aircraft are announced from the United States. One consists of VHO fluorescent lamps extending in continuous lines along both sides of the runway. Reflectors spread the lighting across the runway and cut off upward glare; the installation produces over 3 million lumens per 1,300 ft. of runway. By highlighting the texture of the runway surface in this way the system is said to provide precise height guidance. The other contribution (also from Sylvania and known as the Electronic Flash Approach System) which is complementary to that just mentioned provides early runway identification for incoming planes by means of a sequence of flashes from a number of xenon discharge tubes along the centre line of the approach. This system is already in use on a number of airfields and many more are due to be installed in the near future.

Other Applications

There has probably never before been so much building activity as there is at present. In all countries new factories, offices, schools, etc., are going up and the lighting engineer is finding plenty of opportunity to display his skill. The old complaint of lack of early collaboration with architects is often heard but on the whole the two parties do seem to be getting together more frequently than they did.

The lighting engineer's task seems to be to apply the experience of light sources and their characteristics which he has gained during the last few years to meet the requirements of the interior designer—and this he is doing with some success.

The section of this review dealing with church lighting is smaller than usual but this should not be taken as an indication that there is any lessening of interest or of work in this particular and specialised branch of lighting. In Germany a considerable amount of attention has been given to lighting old and new churches and modern techniques and materials have been used with equal success in both.

The increasing use of new machines and methods in offices has introduced some lighting problems and has perhaps led to better office lighting in general—though one wonders whether it is because the machines are so expensive that they have to have better lighting than the humans who used to do the same work the hard way. However, office staffs are not entirely forgotten as will be seen from some of the pictures of new buildings. Visitors to offices also have to be impressed (or at least not depressed) whether they are members of the general public buying postage stamps or important clients.

One picture is included of the new Queen Elizabeth Building which is the latest addition to the Canadian National Exhibition in Toronto. It is hoped to publish a feature on this building in the near future.

Acknowledgments

This review was prepared by G. F. Cole and is based upon material supplied by the following, to whom thanks are due for their willing co-operation :—

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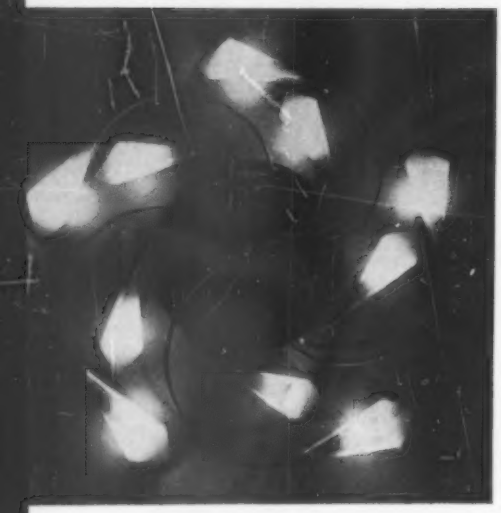
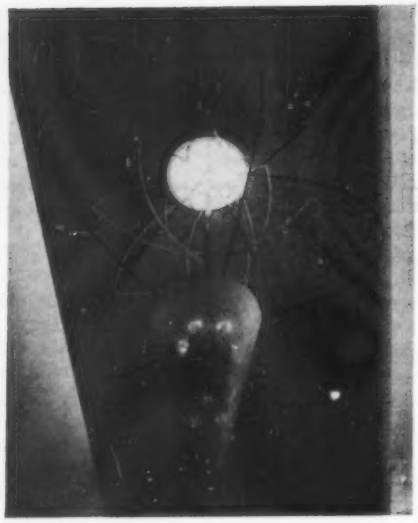
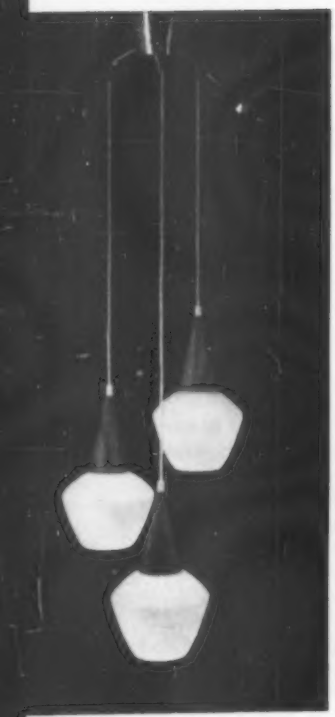
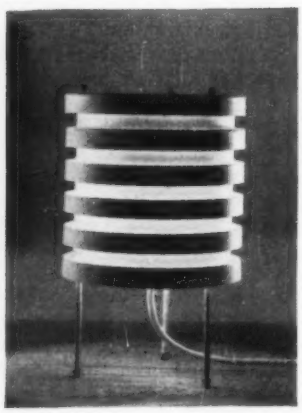
Luminaires





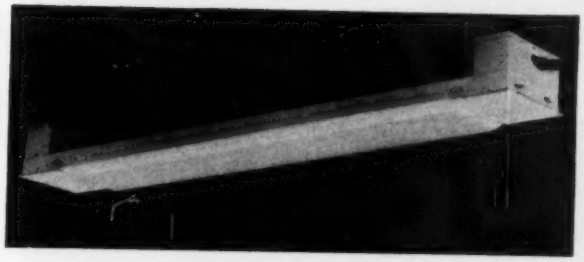
Four tungsten lamp luminaires designed by W. Allen Smith for the Plaza Hotel, Sydney. That on the left is a ceiling fitting made of "Perspex" and chromium tubing. The next, called a space modula, is used in the hotel vestibule. Of the two wall brackets on the right, the upper is of "Perspex" and perforated metal in two colours, and the lower is of perforated metal and copper.



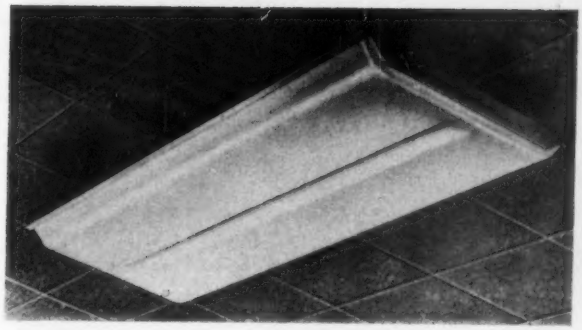


Four Danish luminaires. The pendant on the left has opal glass shades fitted to teak tops; the wall bracket is of opal glass; the table lamp has an Orrefors crystal base; the fitting on the right is called a TV-desk lamp. (LYFA, Copenhagen.)

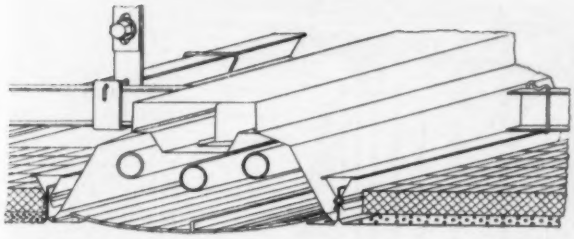
A recessed type fluorescent luminaire with opal 'Perspex' cover and end boxes for gear. (Rejna & Zanardini, Milan.)



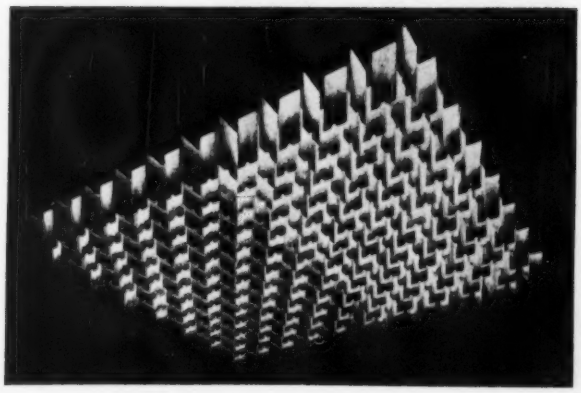
An American shallow plastic enclosed luminaire.



Recessed fluorescent luminaire for use with acoustic ceilings. (Siemens-Schuckert, Erlangen.)



Alternate layers of this type of American louvre rotate 90 deg. to lie flat for easy cleaning. The leaves may be all the same colour or any combination of colours.



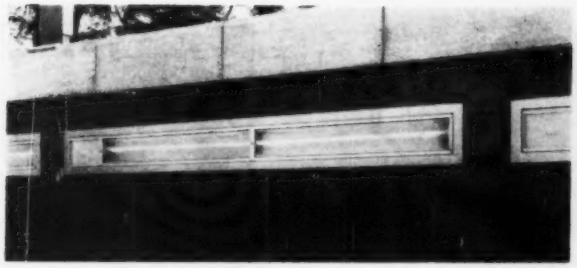
Fluorescent luminaire for use in very corrosive atmospheres. The fasteners for the cover are inside the body and are released by pressure on the small diaphragms. (Disco, Frankfurt-on-Main.)

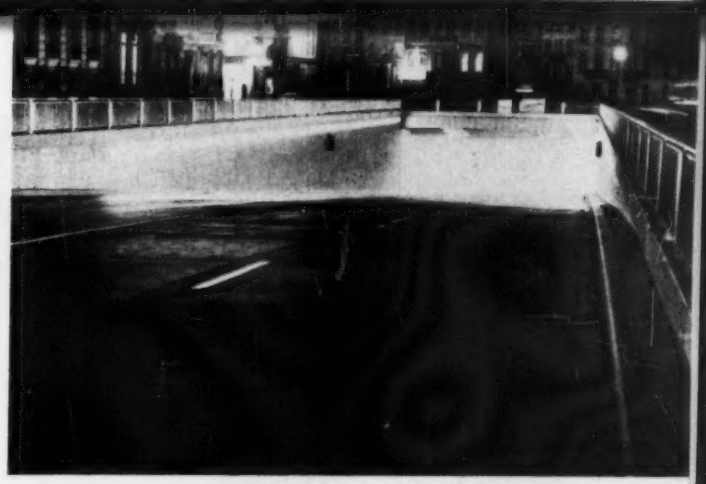
Street Lighting

High intensity street lighting at Eindhoven. The lanterns are mounted at approximately 38 ft. and each contains two 140-watt sodium lamps. (Philips, Eindhoven.)

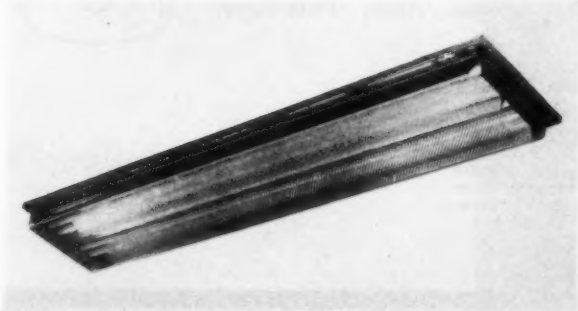
The Gablenzbrucke in Kiel. Cut-off lanterns housing one 65-watt fluorescent lamp mounted parallel to the road on suspension wires at a height of 30 ft. (Siemens-Schuckert, Erlangen.)

Traffic roundabout near Kiel lit by twin 65-watt fluorescent lamp lanterns mounted at 31 ft. and spaced at 98 ft. (Siemens-Schuckert, Erlangen.)



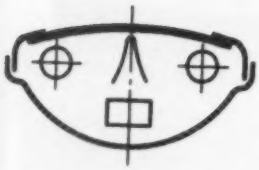


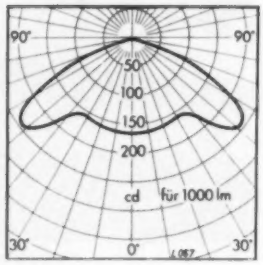
Right, the access ramp to one of the new tunnels in Brussels. Above, close-up of one of the lighting fittings (which may also be used for bridge lighting) equipped with one slim-line fluorescent lamp 96T8. Below, another type of tunnel lighting fitting housing four slim-line lamps. (Schreder, Ans-Lez-Liege.)



Installation of fluorescent mercury lamps at Eindhoven. The columns are 38 ft. high and carry four lanterns each housing one 400-watt lamp. The average illumination on the road is 8-10 lm/ft^2. (Philips, Eindhoven.)

Below left. The Averida de Jose Antionio, Madrid, lit by 1,500-watt tungsten lamps. Right, the Puerto del Sol which is lit by 1,000- and 400-watt mercury fluorescent lamps to an average illumination of 4.5 lm/ft^2.

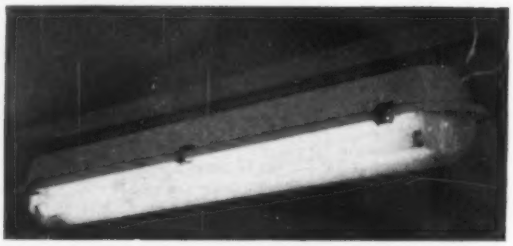




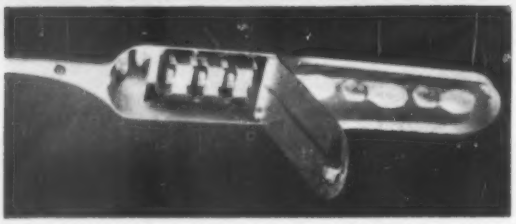
Slim-type fluorescent street lighting luminaire designed to give a wide distribution as shown in the polar curve. The lantern houses two 40-watt fluorescent lamps between which is a polished aluminium reflector which redirects part of the light output to obtain the wide distribution without glare. (AEG, Frankfurt-on-Main.)

Section through another type of fluorescent lantern using a stepped aluminium reflector to obtain a wide distribution. (Disco, Frankfurt-on-Main.)

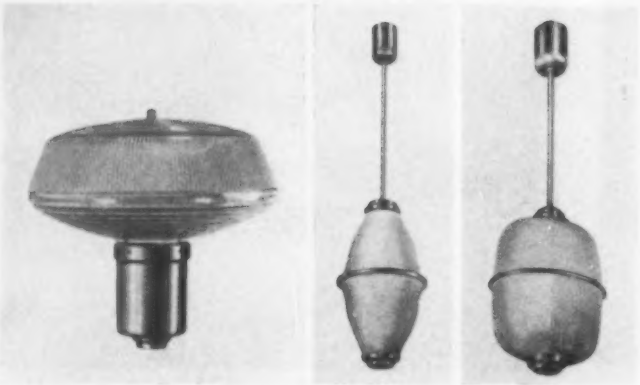
Showing a new method of closing fluorescent lanterns by which the cover can quickly be detached. (Disco, Frankfurt-on-Main.)



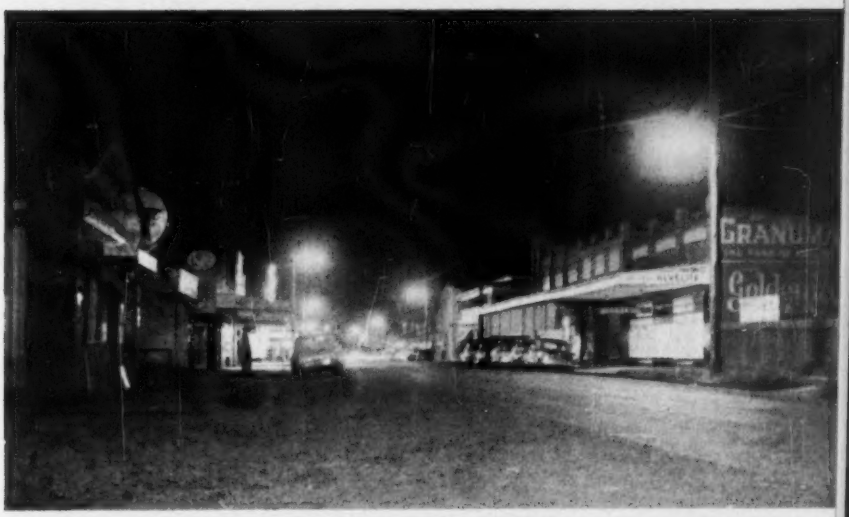
Lantern using three 40-watt fluorescent reflector tubes. (Philips, Eindhoven)



Above, lantern for two 125-watt mercury fluorescent lamps. Below, a similar lantern for three 125-watt lamps showing the interior. (Schanzenbach, Frankfurt-on-Main.)



Three Italian glass lanterns designed for use where harmony between the street lighting equipment and neighbouring buildings is essential. Left, a post-top lantern for use with 750-watt tungsten or 400-watt mercury fluorescent lamps; pendant for use with one 400-watt mercury fluorescent or six 2 ft. 20-watt fluorescent tubes; right, pendant for portico lighting using one 400-watt mercury fluorescent lamp. (Fidenza, Milan.)

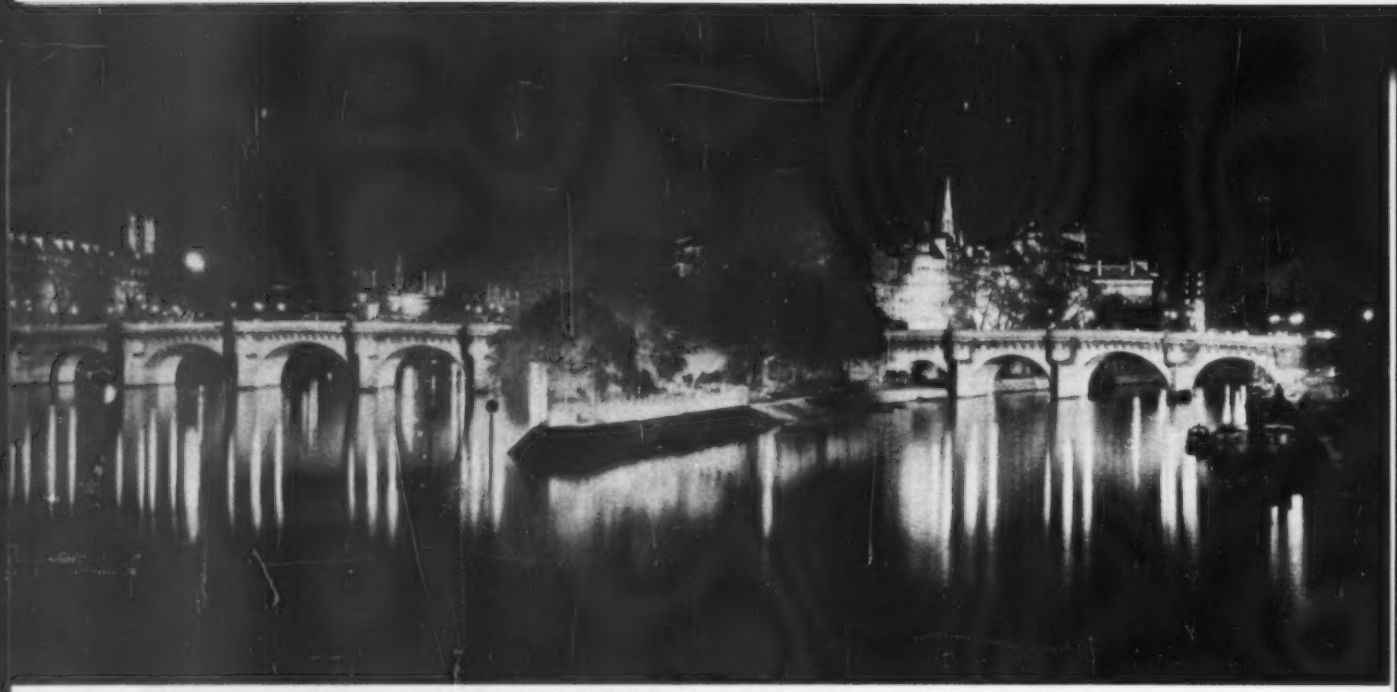


A street in Gloucester, New South Wales which is typical of many country towns in Australia where, though the streets may be wide, only the central part is metalled.

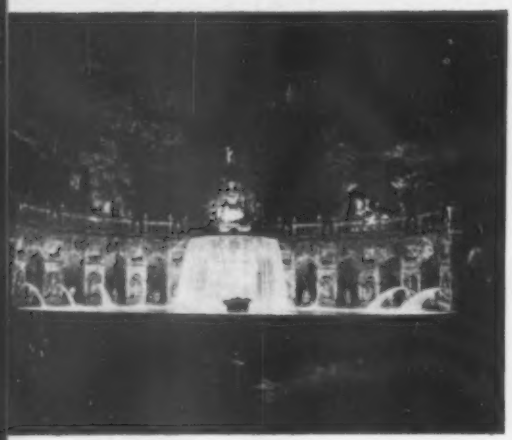
Floodlighting

The Institut, Paris, lit by two Infranor projectors. (Mazda, Paris.)

Instead of floodlighting from outside, the Siemens-Electrogerate building in Munich is made prominent at night by flooding with light inside. (Siemens-Schuckert, Erlangen.)



The Pont Neuf, Paris, and surrounding buildings floodlit during the visit of H.M. Queen Elizabeth. (Mazda, Paris.)

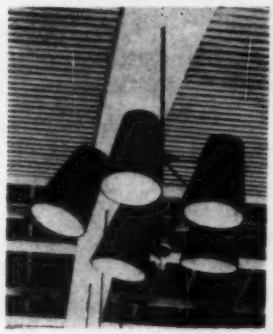


Two of the many Villa d'Este fountains at the Tivoli, Rome. (CGE, Milan.)

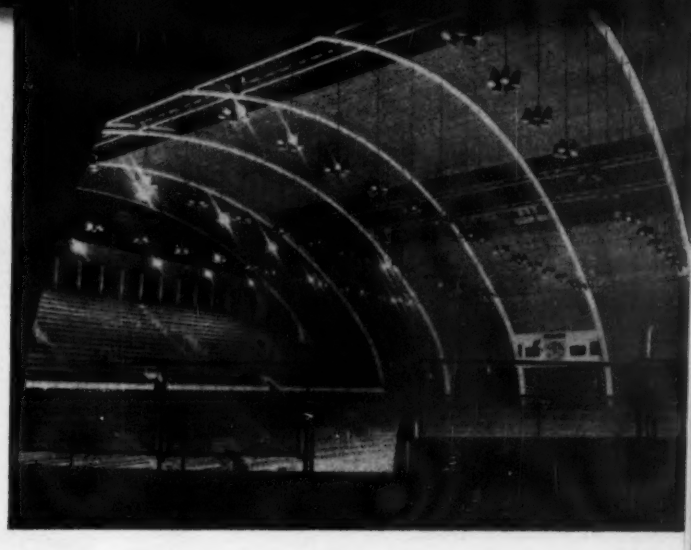
Left, the Alcala Gate, one of the most prominent landmarks in Madrid, floodlit by means of 24 projectors housing 400-watt mercury fluorescent lamps.

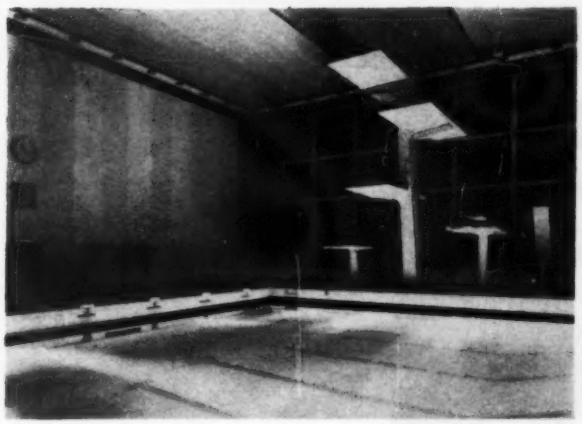
Right, the setting of an outdoor performance of Carmen in the USA, the lighting being by fluorescent lamps.

Sports Lighting

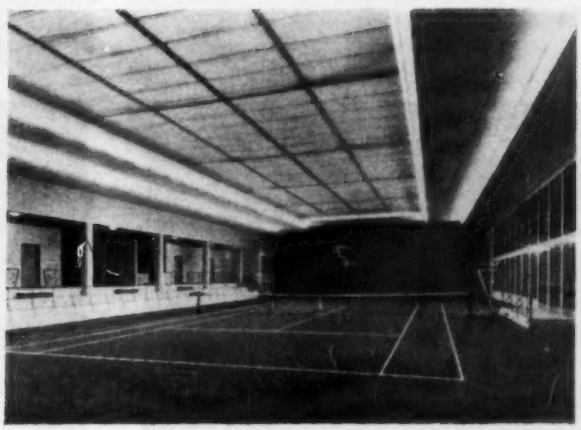


The Municipal Sports Palace at Barcelona lit by 320, 500-watt reflector spotlamps in simple metal spinnings in groups of five. The illumination on the arena (which is below the level at which the picture on the right was taken) is 60-80 lm/ft^2. (Philips, Madrid.)





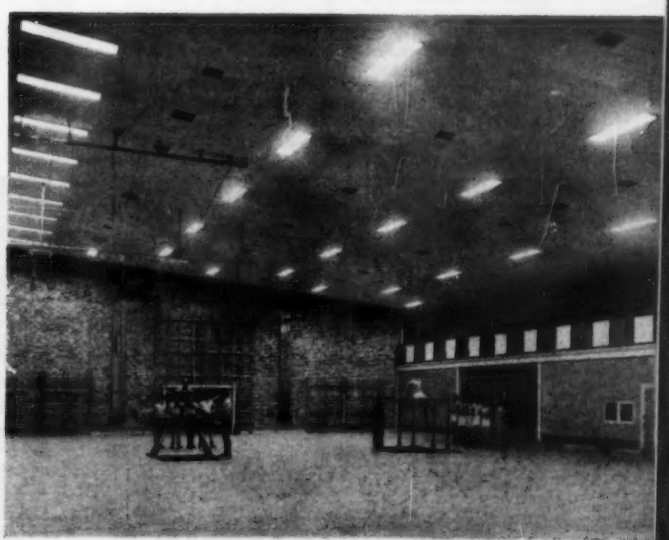
Swimming bath at Bremerhaven. General lighting is by 60 angle type 300-watt tungsten lamp fittings in the perimeter soffit. Underwater lighting (by which this picture was taken) is by 18 500-watt floodlights. (Zeiss-Ikon, Berlin.)



Indoor tennis court in Berlin lit by four continuous lines of fluorescent cornice fittings each of which houses two 40-watt warm white de luxe fluorescent lamps. (Zeiss-Ikon, Berlin.)

Left, the score board at the Wanderers Cricket Ground, Johannesburg, where lights on the board enable the uninitiated to follow the progress of the ball. (Siemens, Johannesburg.)

Right, gymnasium in Germany lit by built-in fittings housing two 65-watt fluorescent lamps. The illumination level is 16 lm/ft^2. (Siemens-Schuckert, Erlangen.)



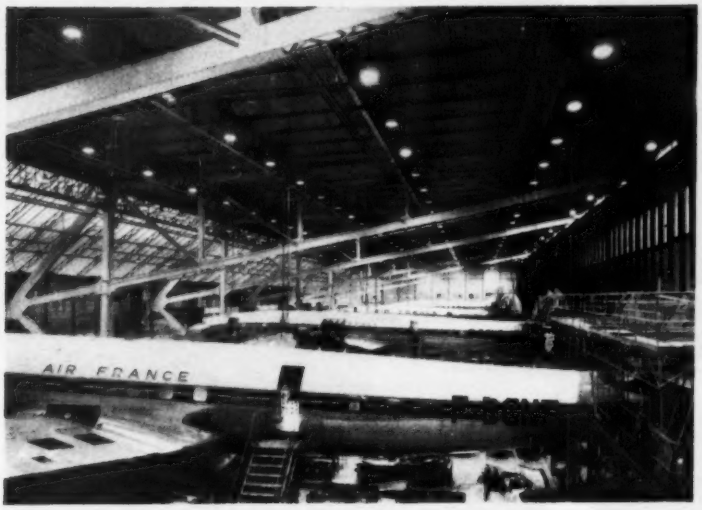
The Bernabeu Stadium, Madrid, which has a capacity of 150,000. The illumination level on the pitch is 100 lm/ft^2.

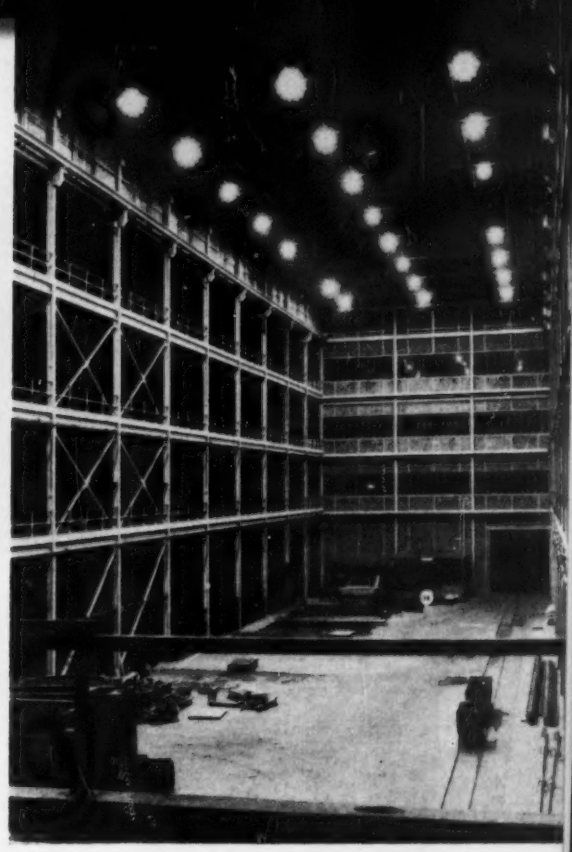
The Soo Kun Poo Stadium, Hong Kong, lit from four corner towers each carrying 36 1,500-watt projectors at a mean height of 174 ft. (AEI, Leicester.)

The San Siro Stadium in Milan lit by 180 1,500-watt floodlights on four towers erected on the stands. Average illumination 25 lm/ft^2. (Buini & Grandi, Bologna.)

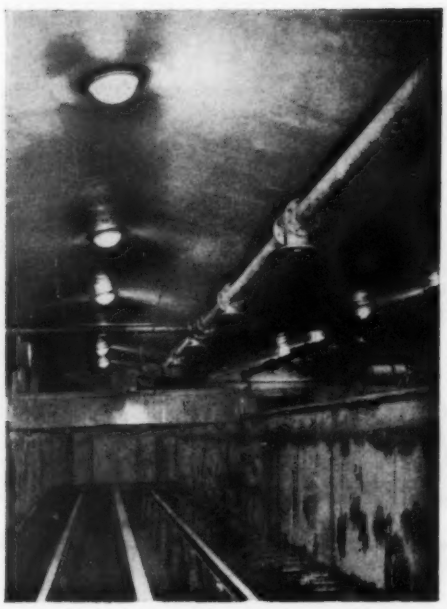
The Belenenses Stadium in Lisbon lit from four corner towers; 56 projectors varying from 1,000- to 2,000-watts are used. Average illumination 16 lm/ft^2. (Zeiss-Ikon, Berlin.)

Industrial Lighting

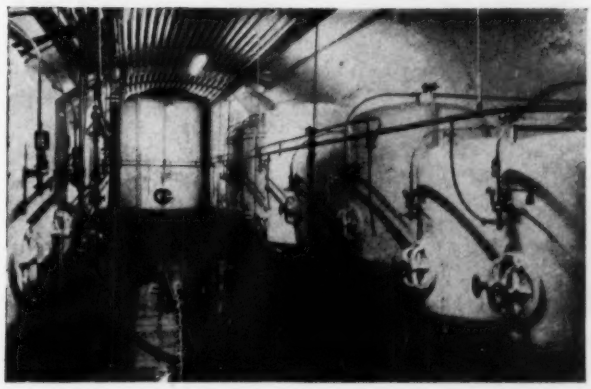




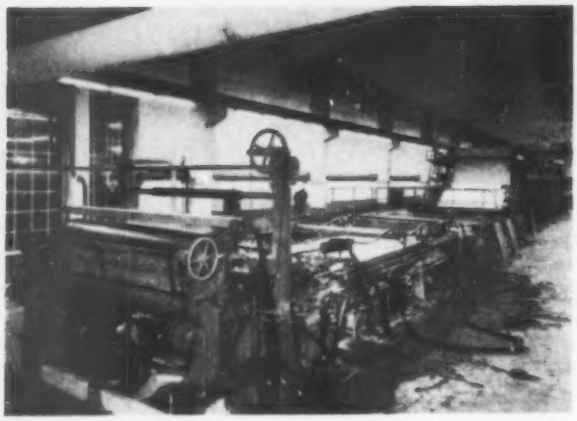
Three high bay installations. Top left, 400-watt mercury fluorescent lamps in a hangar at Orly Aerodrome. (Claude, Paz et Visseaux, Paris.) Left, 1,000-watt mercury fluorescent lamps at the Babcock & Wilcox factory in Sydney. Above right, installation of 250-watt mercury fluorescent lamps mounted at 52 ft. in a colliery building in Belgium. (Philips, Brussels.)



Two methods of dealing with the corrosion problem in breweries. The picture on the left shows the germinating compartment of South African Breweries Ltd. plant at Isando. 200-watt tungsten lamp fittings are recessed into the 2-inch thick concrete ceiling; cast iron rings to hold the fittings were fixed in position when the ceiling was made (Falks, Johannesburg.) The picture below is of a brewery in Munich where corrosion-resisting plastic luminaires with 40-watt fluorescent lamps are used. (Siemens-Schuckert, Erlangen.)



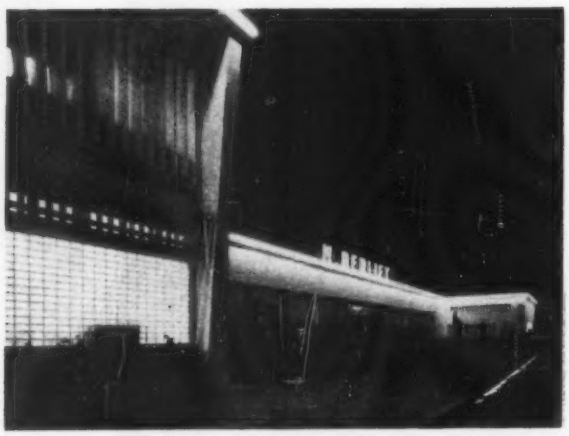
A new factory in the Argentine for Industries Kaiser Argentina where jeeps and station wagons are made. Fluorescent tubes in enamelled iron reflectors are suspended by catenary cable. The artificial lighting is, however, seldom used as the factory works mainly during the hours of daylight and the natural lighting (see above) is very good.



Lighting of a paper-making machine by fluorescent luminaires mounted to one side of the machine. (Siemens-Schuckert, Erlangen.)

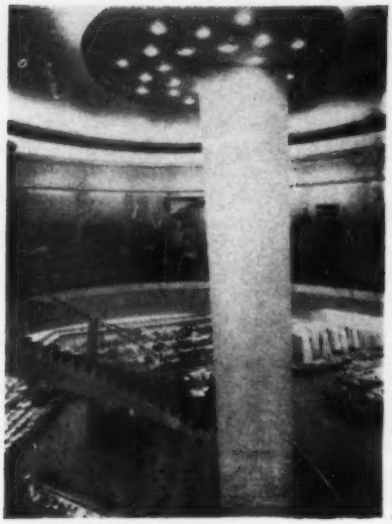
The twin 40-watt fluorescent tube luminaires lighting the benches in this television receiver factory in Australia are always in use. The general lighting is used only at night.

Lighting of this factory is by means of continuous rows of cove luminaires housing 65-watt fluorescent tubes fitted at the apexes of the saw-tooth roof. (Zeiss-Ikon, Berlin.)



Not quite a factory but the exterior of an automobile agency in Marseilles. (Claude, Paz et Visseaux, Paris.)

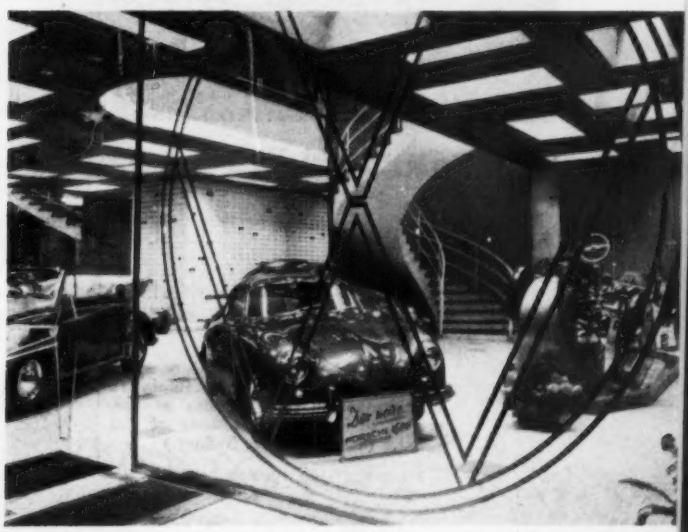
Shop Lighting



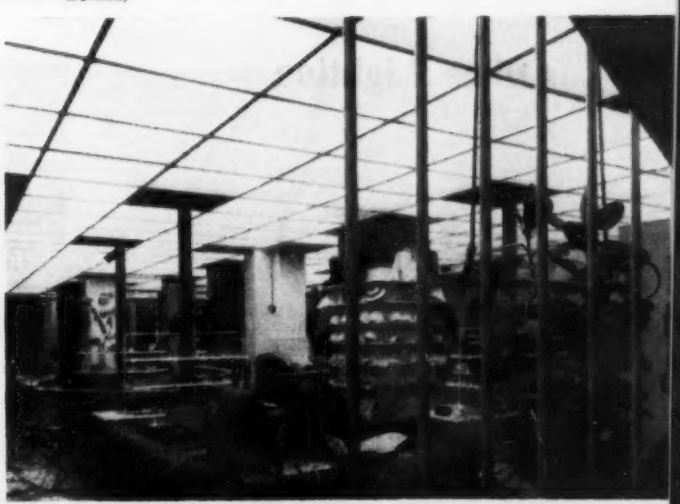
Lighting of the staircase of a departmental store in Paris by means of reflector spot-lamps. (Philips, Paris.)

Installation of 75-watt slim-line lamps above a glass in a shop in Sydney. The owner wanted as much light as possible; a limit was imposed by the ventilation available. (Claude Neon, Sydney.)

The recently redesigned ladies' shoe department at Harrods Ltd, in Buenos Aires.



Car showrooms lit by fluorescent lamps recessed in ceiling boxes. Illumination level 80 lm/ft^2. (Zeiss-Ikon, Berlin.)

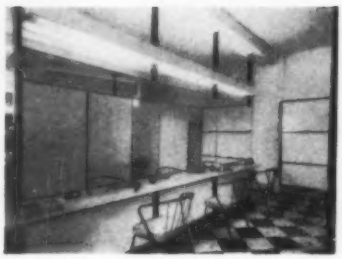


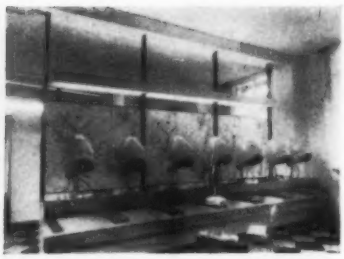
Another example of luminous ceiling with fluorescent lamps behind lightly etched glass. (Philips, Paris.)

Counter lighting at Kodak House, Sydney, by 150-watt reflector spot-lamps. (Sydney County Council.)

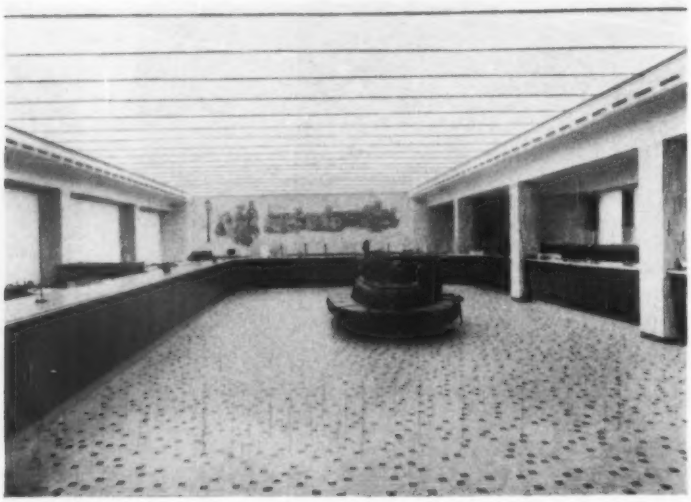
Gramophone record shop lit by fluorescent luminaires with glass covers recessed into an acoustic ceiling. (Siemens-Schuckert, Erlangen.)

A small hairdressing salon. The specially made fluorescent luminaire is used to light both sides of the screen dividing two sections of the salon. (Claude Neon, Sydney.)

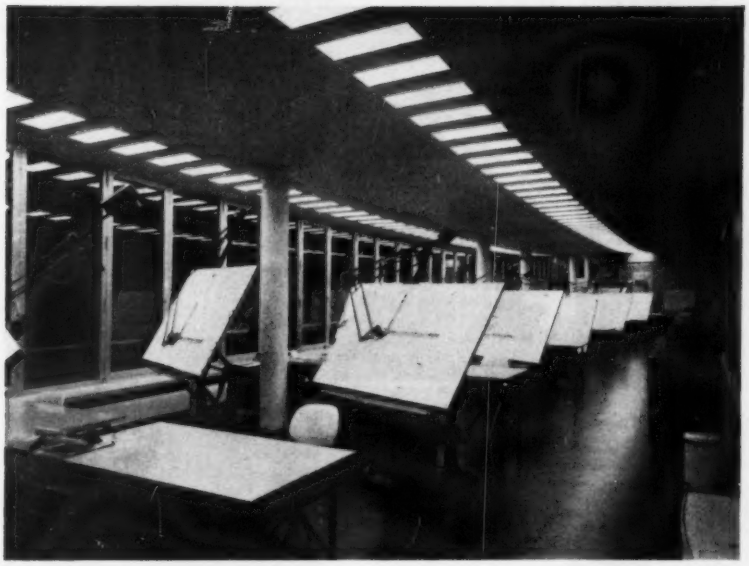




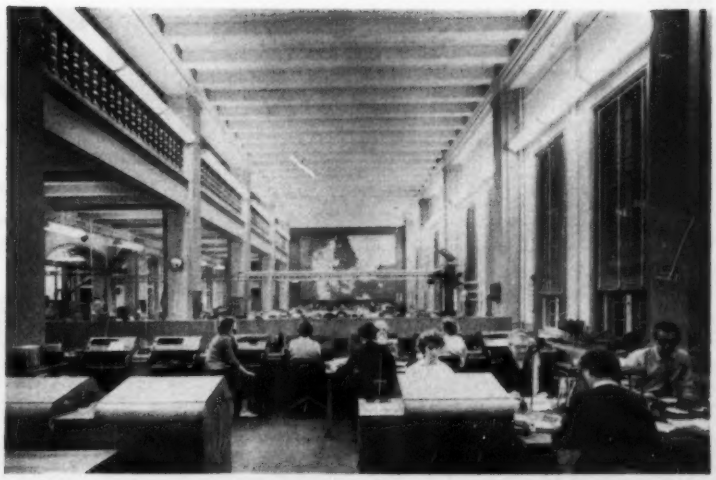
Office Lighting



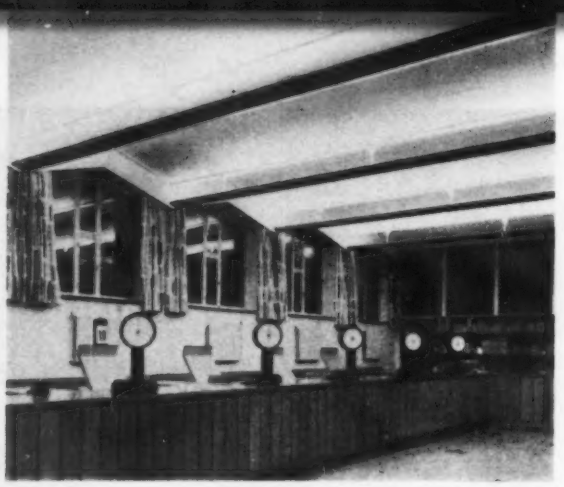
Luminous ceiling in a bank; 147, 40-watt fluorescent lamps are used giving an illumination of 45 lm/ft^2. (Siemens-Schuckert, Erlangen.)

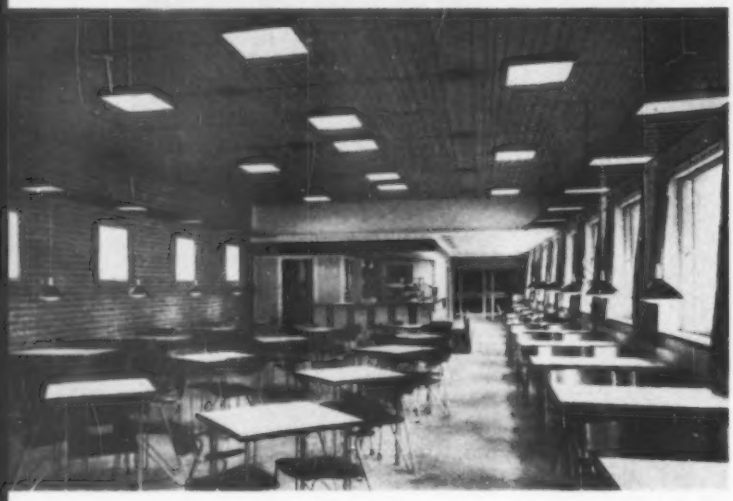


Three photographs of the interior of the new Siemens-Electrogerate building in Munich. Top, the drawing office lit by recessed fluorescent luminaires in an acoustic ceiling; below left, a conference room lit by plastic louvred luminaires; below right, a corridor lit by continuous louvred fluorescent luminaires. (Siemens-Schuckert, Erlangen.)



The teleprinter hall of the postal and telegraph service in Copenhagen. It was necessary to avoid reflections of the luminaires in the glass covers of the platens of the teleprinters. Fluorescent fittings were placed along each side of the hall and adjusted to such an angle as gave an even illumination throughout the room. The fittings are made of opal plastic except the side away from the room which is of stove enamelled steel. Plastic louvres are fitted. (Lyfa, Copenhagen.)

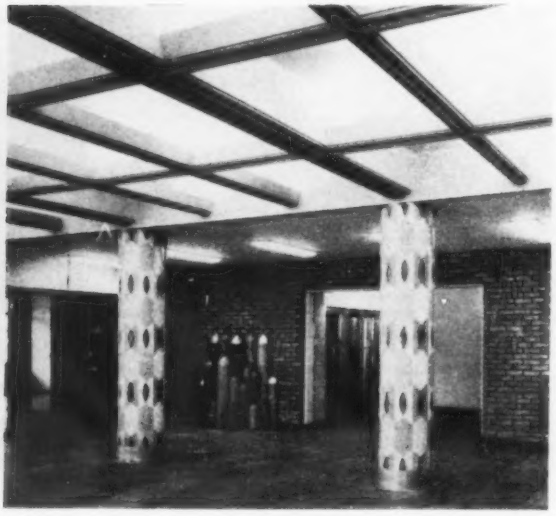




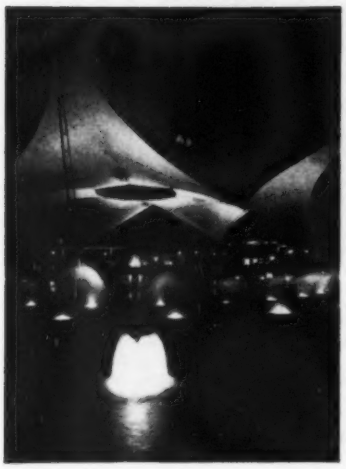
The Post Office, Bergen, Norway. Top left, the main hall; right, the parcel section; below left, the staff canteen. (International Farvefabrik, Bergen.)

Typical of lighting trends in Argentina is the office and waiting room of Transcontinental S.A. in Buenos Aires where general lighting is provided by recessed fluorescent fittings and contrast is achieved by use of tungsten lamp fittings.

Indirect fluorescent lighting in the entrance hall of the Norsk A/S Gassaccumulator building, Oslo. Similar lighting is also used in the boardroom. (International Farvefabrik, Bergen.)



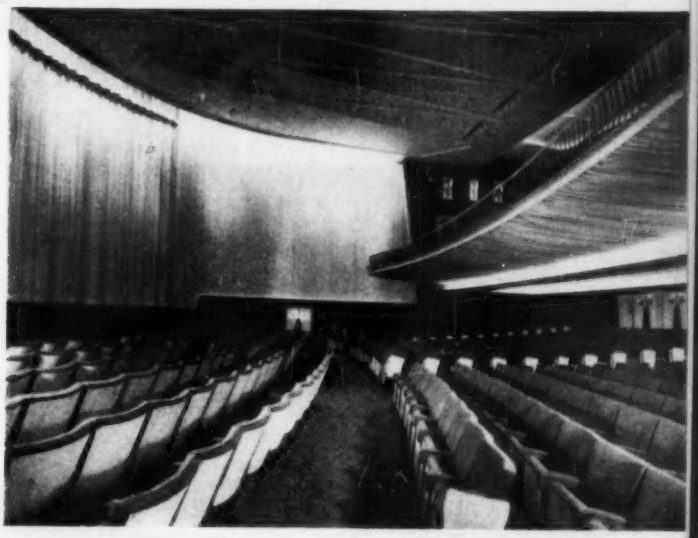
Places of Entertainment



Open-air dance floor at the Cologne Bundesgartenschau. The awning is lit from below by floodlights. The fountains in the lake over which the floor is constructed are lit by underwater floodlights (Siemens-Schuckert, Erlangen.)

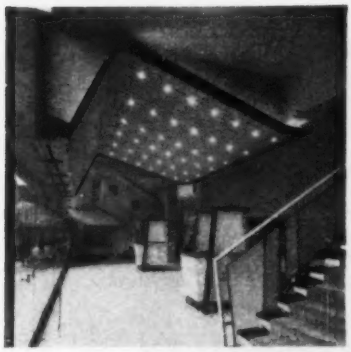
Exterior of the Queen Elizabeth Building, the latest addition to the Canadian National Exhibition in Toronto.

Chandelier in the circular mirrored entrance hall of Mark Foy's Ballroom, Sydney. The lamps used are 28-volt aircraft lamps wired in three circuits of 10 lamps in series.

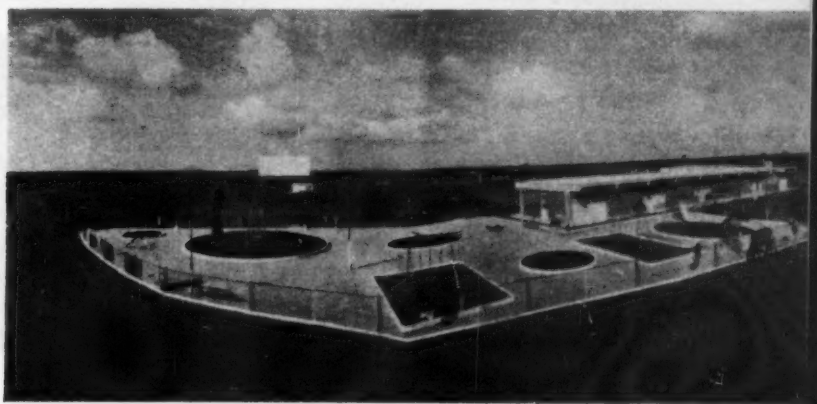


The auditorium of the Richelieu cinema, Paris. The proscenium curtain of glass fibre is impregnated with a fluorescent dye and lit by u.v. lamps concealed in the periphery of the false ceiling. (Mazda, Paris.)

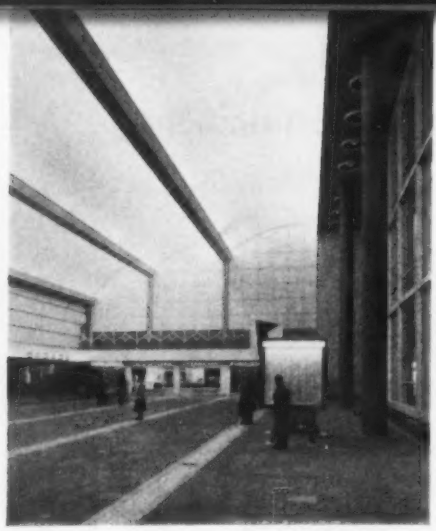
Foyer of the Wepler cinema, Paris, lit by reflector spot-lamps recessed in the floating canopy. (Mazda, Paris.)



The first "Drive-In" cinema in Italy. For general lighting floodlights are mounted on 36-ft. steel columns. Cut-off type fittings are used to permit movement with the cinema area.

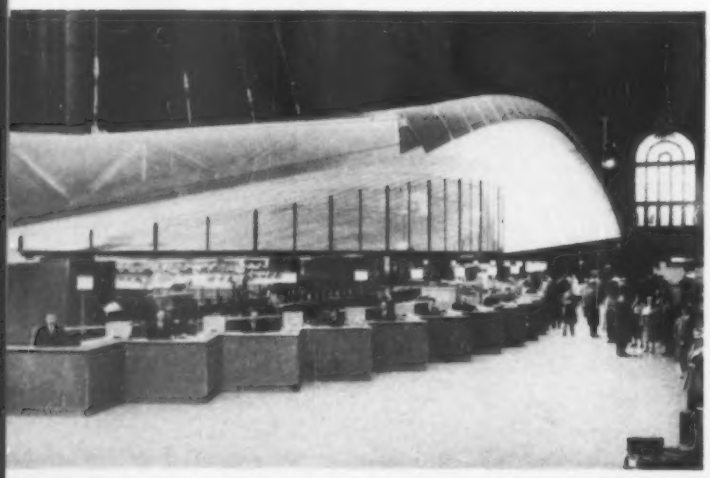


Lighting for Travel



Left, Station Square, Rotterdam, the main lighting of which is from six 50 ft. steel columns each carrying six 400-watt fluorescent mercury lamps. Above, the main booking hall of the station. The hall is 170 ft. long by 72 ft. wide by 45 ft. high and is lit by 306 65-watt 5 ft. fluorescent tubes mounted in four coves to give indirect lighting. The illumination is 30 lm/ft^2. (Philips, Eindhoven.)

Buffet at the Gare d'Austerlitz, Paris, mainly indirectly lit from fluorescent and tungsten lamps concealed in cornices and a false ceiling. (Mazda, Paris.)



Below left, floating canopy at Pennsylvania Station, New York, which is in effect a vast louvred ceiling using 3,200 fluorescent tubes.

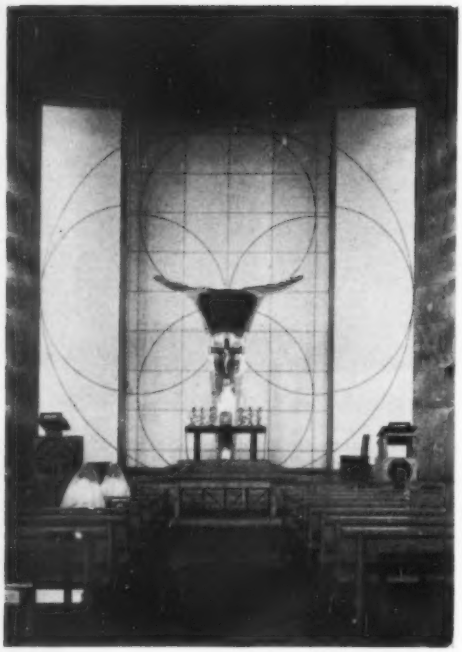
A station on the Oslo underground railway. (International Farvefabrik.)

Day and night views of an installation of the German three 40-watt railway yard fitting described in a previous International Review. In this yard the average horizontal illumination is 0.25 lm/ft² with a diversity of 1 : 1.4 ; the average vertical illumination 3 ft. above the ground is the same with a diversity of 1 : 2.8. (AEG, Frankfurt-on-Main.)

Day and night views of a railway platform installation. The luminaires house two 65-watt fluorescent tubes. (Siemens - Schuckert, Erlangen.)

Fluorescent lighting in a Brussels tram; 20- and 40-watt tubes running at 600 volts are used. (Philips, Brussels.)

Internally fluorescent lit plastic petrol signs are becoming very popular in several countries. This example is of a garage in Norway. (Philips, Oslo.)



The altar wall at St. Anselm's Meguro Catholic Church, Tokyo, lit by concealed tungsten lamps.

The chancel of a church in Esslingen lit by concealed fluorescent lamps. (Siemens-Schuckert, Erlangen.)

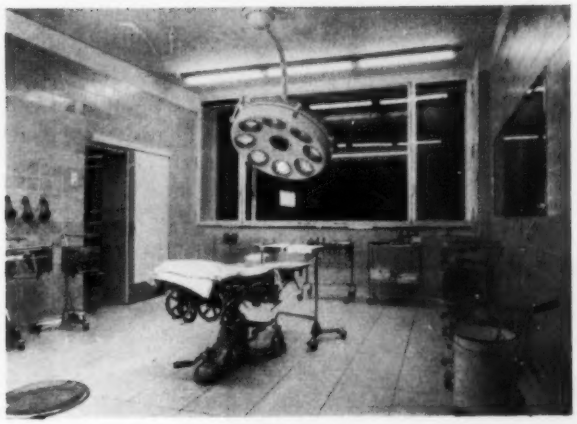
Church Lighting

Another example of lighting of a chancel by tungsten lamps. Ten 500-watt spot lamps and five 100-watt fittings are used. (Philips, Brussels.)

A church in Sydney lit by vertical fluorescent lamp wall luminaires. (Sydney County Council.)

Hospital Lighting

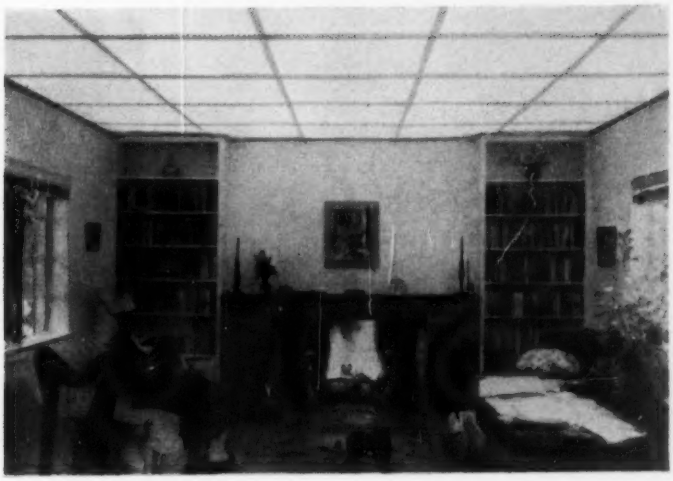
Above, two examples of fluorescent wall luminaires designed to give upward or downward lighting without producing glare in the eyes of other patients. (Left, Siemens-Schuckert, Erlangen; right, Falks, Johannesburg.)



Above right, a children's ward in a Finnish hospital. Recessed single lamp fluorescent fittings give general lighting; the specular reflector is arranged to give a cut-off before light reaches the eyes of the patient for whom a bed-head light is provided.

Operating theatre in a hospital at Nordlingen. (Siemens-Schuckert, Erlangen.)

Domestic Lighting



Luminous ceiling in an American home lit by 25-watt 30-volt tungsten lamps. Parts of the ceiling may be switched separately and part is also on dimmer control.

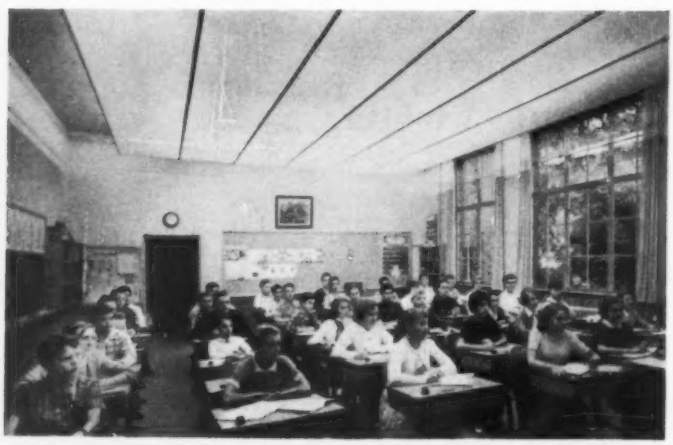
Extreme left, luminous ceiling for domestic bathrooms. (Wakefield, Vermilion.)

Left, fluorescent lighting in a kitchen in Germany. The luminaire is of plastic using a U-shaped 40-watt fluorescent lamp. (Siemens-Schuckert, Erlangen.)

School Lighting

Entrance hall of a primary school in Germany lit by recessed 100-watt tungsten lamp luminaires. (Zeiss-Ikon, Berlin.)

Laboratory bench lighting in an American university designed to give a high level of illumination (175 lm/ft^2) without disturbing reflections for microscope work. (Wakefield, Vermilion.)

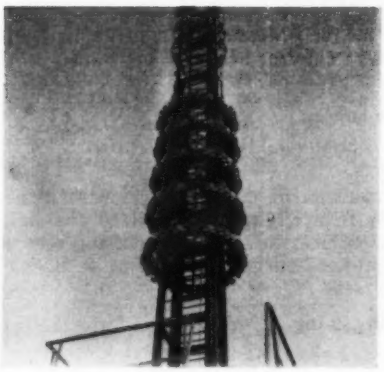


Rug-type luminous ceiling in an American school.

Miscellaneous

Council chamber of the Town Hall, Berlin - Spandau. Each of the 15 louvred ceiling panels houses three twin 40-watt fluorescent tubes fittings. (Zeiss-Ikon, Berlin.)

Cold cathode tubing is not used overseas to any great extent other than for decorative effect; this installation is a typical example. (AEG, Frankfurt-on-Main.)



A visual weather forecasting beacon in Sydney. During the day forecasts of changes in the weather are indicated by combinations of coloured lights for which 150-watt reflector lamps are used. At night forecasts are shown by a system of cold cathode tubing.

An office in the USA in which use is made of luminous modules, luminous ceiling, fluorescent cove lighting and tungsten spot lamps. (Wakefield, Vermilion.)

Lighting Abstracts

OPTICS AND PHOTOMETRY

535.241

558. Illuminating engineering nomenclature and photometric standards.

Illum. Engng., **52,** 600-608 (*Nov.*, 1957).

Prepared by the Nomenclature Committee of the American IES, this glossary is the first part of a revision of a similar glossary issued by the American Standards Association in 1942. This first part deals with photometric quantities, radiation, colour, aviation lighting and characteristics of surfaces and media for controlling light. P. P.

559. The problem of glare from fluorescent lamps. 612.843.367

F. M. CHERNILOVSKAYA, *Svetotekhnika* (10), 22-3 (1957). *In Russian.*

The relative degree of glare from fluorescent lamps and incandescent sources of the same shape, size and luminance was compared. The glare from the fluorescent lamps was greater. It is concluded that this increased glare effect is due to the different spectral composition of the radiation from the two sources. R. G. H.

LAMPS AND FITTINGS

621.325

560. Optical applications of mercury short-arc lamps.

E. W. BEGGS, *Illum. Engng.*, **53,** 22-30 (*Jan.*, 1953).

Short-arc mercury and mercury-xenon lamps are bulb-type light sources with characteristics similar to those of an incandescent lamp, but with a luminance, light source shape and size comparable with that of a carbon arc. These new lamps are therefore being increasingly used in projection systems where "point sources" of very high luminance are required. Applications to searchlights, landmark beacons, optical comparators, polarizing instruments, image projectors and photocopying techniques are described. P. P.

561. Spectral luminosity of fluorescent lamps. 535.33

C. W. JEROME, *Illum. Engng.*, **53,** 41-44 (*Jan.*, 1958).

The brightness of a fluorescent lamp can be computed from spectral energy distribution data for the lamp by a continuous integration process with respect to the CIE standard visibility function. This is demonstrated by a series of spectral luminosity curves for different lamps derived from the corresponding spectral energy distribution curves. The integrations is simplified if the spectral energy curves are plotted on "visibility paper," on which the wavelength scale is adjusted to accord with the visibility function. Similar plots with wavelength scales adjusted to accord with the $\bar{x}$ and $\bar{z}$ functions enable the red and blue colour renderings of fluorescent lamps to be rapidly assessed. P. P.

621.327.43

562. Glow discharge characteristics of fluorescent lamps.

C. J. BERNIER and W. C. GUNGLE, *Illum. Engng.*, **53,** 32-38 (*Jan.*, 1958).

The American "rapid start" circuit can have a disadvantage when used with very high output (VHO) fluorescent lamps in that the glow discharge which precedes the arc discharge in this type of circuit can have a deleterious effect on the cathodes of heavily loaded lamps. The addition of a small quantity of argon to the neon gas-filling in these lamps helps to reduce cathode sputtering. Placing an auxiliary anode in the Faraday dark space and covering exposed metal parts in the negative glow region with an insulating material also materially help to reduce sputtering. P. P.

621.329

563. Optimum distribution of light intensity of fittings for factory lighting.

M. M. EPANESCHNIKOV, *Svetotekhnika* (12), 1-6 (1957). *In Russian.*

The optimum form of polar distribution of intensity of factory lighting fittings depends on the arrangement (spacing, height) of the fittings in the building and the necessary distribution of illumination on the working plane. An experiment was conducted in which the spacing/height ratio was varied from 0.5 to 2.0, the distance between the fittings being either 6 or 12 metres. Measurements of illumination were made on planes at different heights. R. G. H.

564. Asymmetric car lamps. 621.329

U. ANKARLOU, *Ljuskultur*, 108-110 (*Oct.-Dec.*, 1957). *In Swedish.*

The basic characteristics of the new asymmetric headlamp standardised by France, Germany, Holland and Italy are described. The problems involved in adapting such a system to Swedish left-hand traffic are discussed. R. G. H.

565. Highway visibility in fog. 628.971.6

C. MARSH, *Illum. Engng.*, **52,** 621-627 (*Dec.*, 1957).

The visibility on American turnpikes under foggy conditions is being studied at Pennsylvania State University under four headings, *viz.* vehicle mounted lamps, street lighting, fog detection and traffic control and test equipment. A comparison of test results is made by means of photographs taken on a mock-up road under simulated fog conditions. A polarized spot lamp and cross-polarized viewer are claimed to be the most effective fog light system yet available. P. P.

628.978

566. A new solution of some hospital ward lighting problems.

G. PETTERSON, *Ljuskultur*, **29,** 99-100. (*Oct.-Dec.*, 1957). *In Swedish.*

Several ward lighting problems are solved together with the aid of a vertical floor-mounted unit ("stativ") which incorporates an adjustable bedside lamp suitable both as a reading lamp for the patient and an inspection lamp for the clinician, a night lamp at bed height for the patient, and a low-mounted night lamp which can be switched on by the nurse from the door of the ward. The unit also contains the various switches for bells, radio, etc. It is wired up through the floor. R. G. H.

567. A street lighting laboratory. 628.971.6

Ljuskultur, **29**, 97-98. (*Oct.-Dec.*, 1957) *In Swedish.*

A description with photographs is given of a new full-scale street-lighting laboratory in the Netherlands. The laboratory consists of a road, 350 yards long by 15 wide, on which ten adjustable towers house a range of experimental lighting units. The laboratory is used for fundamental studies, tests on new designs of fitting, and demonstrations of street lighting principles. R. G. H.

568. Current lighting problems in Iceland. 628.93

A. GUDJOHNSEN, *Ljuskultur*, **29**, 95 (*Oct.-Dec.*, 1957). *In Swedish.*

The Icelandic Lighting Society has now been operating for three years. One of its main activities is to draw up a code of lighting practice appropriate to the country's economy. Fluorescent light is becoming widely used, but the experience of other countries is being studied before it is installed freely in hospitals. As there are no railways, car traffic is increasing rapidly with the population of Reykjavik and so street lighting, at present by filament lighting in simple symmetric fittings, is of great importance. It is hoped to set up a laboratory of lighting technology. R. G. H.

569. The environment and the lamps. 628.972

LISA JOHANSSON-PAPE, *Ljuskultur*, **29**, 93-94 (*Oct.-Dec.*, 1957). *In Swedish.*

The environment should be healthy, restful and appropriate in character. There should be mutual adjustment between the environment and the lighting. Just as filament lamps are better now than when first introduced, so will fluorescent lamps improve, but there must also be a readiness to choose colours for interior decoration which are more compatible with such lighting R. G. H.

570. Pleasant lighting in the home. 628.978

Ljuskultur, **29**, 86-87, (*Oct.-Dec.*, 1957). *In Swedish.*

The ceiling fitting plays a minor role in comfortable home lighting, but when well designed it has a function to perform. All fittings, whether ceiling, wall or floor lamps, should be shielded to leave the eyes in shadow. Lamps over meal tables should be adjustable in height to light the table brightly but shield the eyes from glare. R. G. H.

628.978

571. Lighting installations in the sports building in Helsingborg.

B. CEDERHOLM, *Ljuskultur*, **29**, 88-92 (*Oct.-Dec.*, 1957). *In Swedish.*

The new indoor sports building in Helsingborg consists of three main halls with entry and corridor space. The lighting of the different areas is described with illustrations. In the main hall the general lighting comes from two parallel rows of screened fluorescent lamps, which can be switched on in sections to give an illumination of either 10 or 40 lm/ft^2. Over the space used as a boxing arena a unit provided with 16 750-watt filament lamps in anodised aluminium reflectors can be raised or lowered. The other halls, for bowling, boxing, tennis, table-tennis, etc., are lit by fluorescent lamps. R. G. H.

628.978

572. Fluorescent lamps in refrigeration chambers and cold-storage rooms.

R. A. PIRO, *Ljuskultur*, **29**, 110-112 (*Oct.-Dec.*, 1957). *In Norwegian.*

The advantages of using fluorescent lamps in cold-storage rooms are discussed. Starting requires special consideration, thermal starters under thermostatic control being necessary. Fittings must be of rust-free material which resists the effects of frequent defrosting, which of course occurs whenever the lamps are switched on. R. G. H

628.971.6

573. Effect of the post on the light distribution from post-top mounted fittings.

H. KOCHHAN, *Lichttechnik*, **10**, 63-66 (*Feb.*, 1958). *In German.*

When a street-lighting fitting consists of a conical diffusing glass bowl under a white enamelled reflector, the column obstructs part of the fitting as viewed from the street and so the polar curve of light distribution as determined in the laboratory must be modified to allow for this. The author gives a detailed analytical treatment of the problem and derives an expression for the correction factor in terms of the various dimensions involved, including the distance of the observer from the column. For a typical case the correction factors at all angles from the downward vertical are shown in the form of a polar curve; the effect is only important at comparatively short distances from the column. J. W. T. W.

574. Electricity in hospitals: recent installations. 628.97

A. SALOMON, *Bull Soc. Franç. Elect.*, 7th Series, **7**, 765 (*Dec.*, 1957). *In French*

Describes the electrical installation in modern hospitals, with special requirements and details. Lighting requirements are detailed, and some particulars given of special equipment forwards, for psychiatric hospitals and for operating theatres, the latter at the hospital of Saint-Lo, where the lighting is accomplished by 71 projectors set in a dome surrounding the operating table. Special switching arrangements are provided. J. M. W.

628.971

575. Electrotechnical problems in the construction of the Basle-Mülhausen international airport.

H. HOFSTETTER. *Bull. Assoc. Suisse Elect.*, **49**, 77-87 (*Feb.* 1, 1958). *In German.*

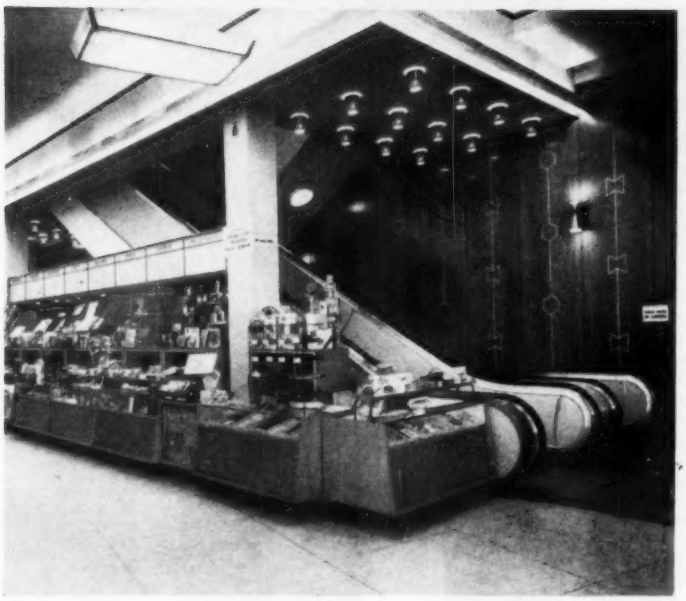
This airport was constructed by agreement between the Swiss and French governments, the French providing the site and the Swiss being responsible for the buildings and installation. Elaborate precautions have been taken against any possibility of failure of the electric supply. A novel feature is the provision of a number of underground sub-stations sited close to the lights they supply so that cabling is reduced to a minimum. The Calvert system has been adopted and the various types of lights used are described in detail. Special mention is made of the lighting control panel in the control tower. J. W. T. W.

576. 1,700 maintenance contracts. 628.9

BENN J. HARTMANN, *Electrical Construction and Maintenance*, **57**, 106-111 (*Jan.*, 1958).

Though maintenance which amounts only to cleaning and relamping on a "spare time" basis is better than none at all it is obvious that an expensive installation cannot give proper results unless maintenance is organised. This article describes the experience over the last 20 years of one company which offers a maintenance service for all types of lighting including interior lighting of factories, offices and shops, floodlighting and signs. Organisation of maintenance teams, equipment used, office records, etc., are described. In Los Angeles alone 45 routine service trucks are operated plus a further 12 special purpose vehicles; all are in radio contact with the office. G. C.

INSTALLATIONS



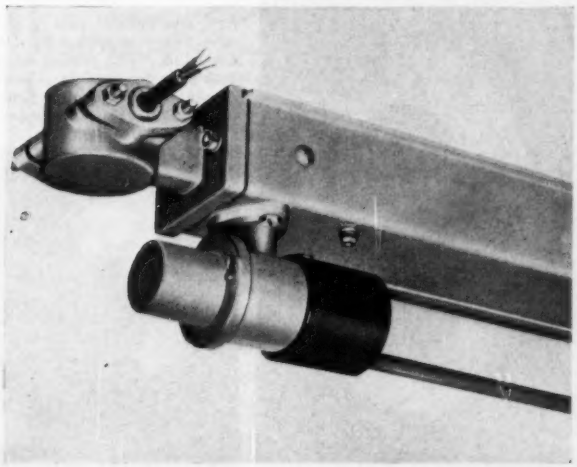
Two views of the interior of the new £3,000,000 Lewis's store in Bristol. Left, shows the lighting over an escalator; above is a general view of the ground floor. The architects were Sir Percy Thomas and Son of Cardiff.

A luminous ceiling in which use is made of interlocking polystyrene opal diffuser panels. This installation is in the offices of the Equity and Law Life Assurance Society at Haslemere. The architects were Brocklehurst, Cooper & Williamson and the ceiling diffuser panels were supplied by Tube Lamination and Engineering Ltd.

NEW PRODUCTS

Dustproof fluorescent fitting

The AEI Lamp & Lighting Co. Ltd. announce a new dustproof 5 ft. single-lamp fluorescent fitting for use in collieries, textile mills and timber mills The fitting was originally designed for mines roadway lighting and general industrial applications. It consists of a sealed box section metal channel housing 80-watt switch start control gear. It



has a "T" entry armoured cable box at one end, or "through entry" armoured cable boxes at each end. The lamp is protected by a "Perspex" cylinder supported at each end by silicon aluminium castings bolted to the gear channel. A stove enamelled steel reflector can be supplied as an optional extra. The metal gear channel is constructed from heavy gaugesheet steel electro-tinned and finished in stove enamel grey. Access to the control gear is by removing a lid in the channel. "Neoprene" sleeves are used to provide a seal between the "Perspex" cylinder and the aluminium end casting. Adjustable metal suspension straps engage with the lip on the top of the gear channel. A free BC lampholder is quickly exposed by loosening two screws at the relamp end of the fitting, allowing removal of the end cap. By applying pressure to the exposed lampholder the lamp is released from the fixed end and removed for replacement. The list price of the fitting is £18.10.0.

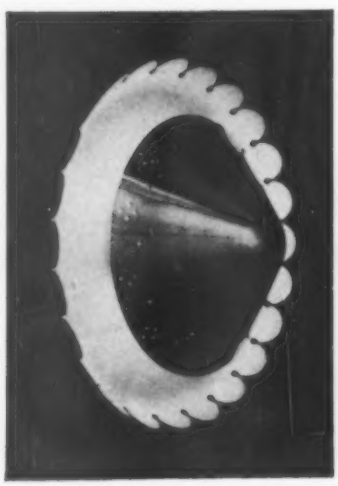
Studio lighting units

The first of a new GEC range of TV and film studio lighting units, comprising a 2-kw. and a 5-kw. spotlight, have just been introduced. The new units are designed to provide answers to problems which confront lighting engineers both in TV and film studios, where, for widely different reasons, lightweight, easily operable and easily manoeuvrable lighting units are required. In television studios, fittings of this type are needed to save time in arranging lighting for productions as the studios are in almost constant use. In film studios the need is for lightweight units which can be moved easily from one studio to another and rigged quickly.

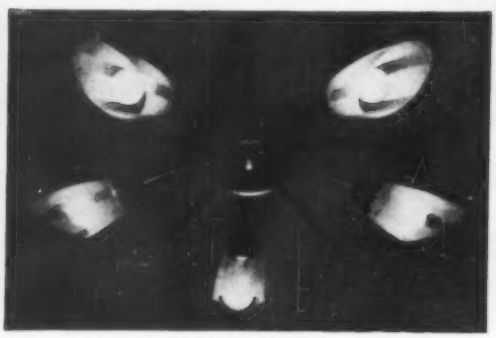
The new spotlights are constructed of sheet steel with all joints welded. The cooling system is designed to allow air to pass through the unit at whatever angle it might be operated. A new bipost lampholder has been designed with improved contacts, the tension of which can be adjusted quickly to ensure that the lamp is securely held at all operational angles. The new holder also carries a spherical backing reflector, thereby forming a complete optical unit.

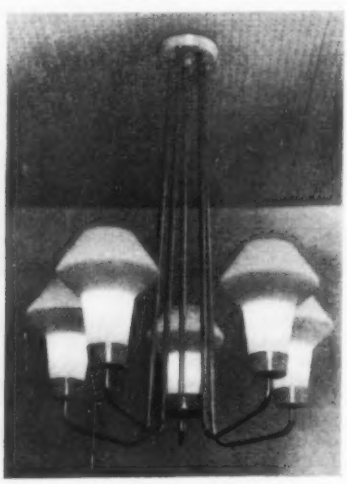
Each unit can be supplied with two alternative versions of "yoke" for mounting. One houses a new self-locking system which enables an operator standing on a studio floor to "tilt," "pan," "focus" or "switch" a unit by using a light aluminium pole. This pole terminates through a flexible coupling in a square sectioned socket which has a "bell mouthed" skirt to enable the control points on the unit to be engaged easily. When the operating pole is rotated to obtain the movement required it locks itself to the lighting unit automatically; when the rotation ceases, the pole frees itself automatically and instantaneously.

Alternatively, units can be supplied with a conventional yoke which terminates in a spigot made to B.S.2063 : 1953. The lamp house is locked to the yoke by a single, side clamp; by releasing the clamp, the lamp house is free to rotate in its yoke without tending to tighten.



Left and below: two of the range of imported fittings now being supplied by Uncles, Bliss & Co., Ltd. of Croydon. The fitting on the left is 11½ in. diameter and may be used as a wall or ceiling fitting. Right: a new contemporary fitting by S.L.R. Electric Ltd. of South Harrow suspended from a 2 ft. module ceiling.





Trade Literature

CHLORIDE BATTERIES LTD., Grosvenor Gardens House, Grosvenor Gardens, London, S.W.1.—A new booklet providing a complete reference to the comprehensive range of Exide batteries and Drydex power units for electronic and transistorised equipment.

OSBORNE MANUFACTURING CO. LTD., 5-13 Highgate Square, Birmingham, 12.—Catalogue giving details and prices of the present range of "Cobra" domestic fittings including ceiling fittings, wall brackets and table lamps.

Personal

MR. S. HALE and DR. A. B. WHITWORTH have joined the board of A.E.I. Lamp and Lighting Co. Ltd. Mr. Hale has been appointed Director in charge of Lamp Manufacture and Dr. Whitworth Technical Director. Their offices are now at the new headquarters building of the A.E.I. Lamp and Lighting Company at Melton Road, Leicester.

Veritys Ltd. announce the appointment of MR. JAMES MARTIN, Assoc.I.E.E., Dip.M.I.E.S., as Manager of their London Maxlume Division. Mr. Martin was with The Benjamin Electric Ltd. from 1934 to 1946 when he joined Thorn Electrical Industries Ltd. He joined Veritys Ltd. in 1957 being originally attached to their Manchester branch. Mr. Martin has been Chairman of the Leicester and Manchester Centres of the I.E.S.

MR. W. J. WALPOLE has been elected a director of Lumenated Ceilings Ltd. He was actively associated as London Manager with the founding of the company in 1954, and was appointed General Manager last year.

The Electric Lamp Industry Council announces that MR. A. E. PAGE, of the General Electric Co., Ltd., has been elected Chairman for the year commencing March 1, 1958.

MR. DEREK PHILLIPS, A.R.I.B.A., has resigned from his position as architectural consultant to the AEI Lamp & Lighting Co. Ltd. From April 1, 1958, he will be setting up in private practice as a design consultant to architects and the lighting industry. He hopes to render independent service to companies engaged in the development of the various elements of "service ceilings," in which the environmental controls of heat, light and sound are incorporated. Manufacturers are invited to send their trade literature to him at 13, Oppidans Mews, London, N.W.3.

MR. R. J. FLITT has been appointed a representative of the Lighting Division of Philips Electrical Ltd. for the South Staffordshire area. He will be based at Branch Headquarters, Birmingham.

MR. NORMAN F. BRAND, lately Chief Engineer of the company, has been appointed to the Board of Heyes & Co. Ltd. of Water-Heyes Electrical Works, Wigan.

Situations

Wanted

Representative/Lighting Engineer. Ambitious young man, eight years experience, modern ideas, seeks more interesting position offering greater scope, responsibility and remuneration, London or surrounding area. Box No. 583.

Vacant

A.E.I. Lamp & Lighting Co. Ltd. has immediate vacancies in its Lighting Department for:—(a) LIGHTING ENGINEERS, including specialists in Floodlighting and Shoplighting. Preference will be given to holders of the I.E.S. Diploma or those training for this qualification. (b) TECHNICAL ILLUSTRATORS. Successful applicants will be required to work in London for an initial period, but later this year the Department will move to its new permanent headquarters in Leicester.

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I.E.S. ACTIVITIES

London

At the sessional meeting held on March 11 a paper entitled "Lighting and safety in building operations and works of engineering construction" was presented by Mr. J. Gordon Scott. This was probably the first time this subject, which is of considerable importance in view of the amount of building and engineering construction now being undertaken and planned for the near future, has been discussed at such a meeting and it is interesting that the author is Accident Prevention Manager of the Midland Employers Mutual Assurance Ltd.

The particular concern of the paper was accident prevention and the safety of persons employed on building operations and works of engineering construction at times when the work is required to be done during the hours of darkness, or when work is to be done inside buildings where the natural light is obscured, or in excavating or tunnelling operations. By the very nature of such work the lighting will have to be artificial and will invariably be of a temporary nature while the major portion of the work is being carried on.

Since 1950 there has been a steady increase every year in the number of accidents reported from building operations: 12,340 (including 213 fatal accidents) in 1951 to 14,561 (including 184 fatal accidents) in 1955. The relevant figures for works of engineering construction are 2,116 (37 fatal) and 2,012 (39 fatal).

When work is being carried on under artificial light the accident rate will depend substantially on the quantity and quality of the light. Not only must lighting be provided, but it must also be provided safely. The standards of lighting will vary considerably with different types of operation, and as work progresses it is quite probable that the installation, fittings and power supply will have to be modified from time to time to suit changing conditions.

By virtue of Sections 107 and 108 of the Factories Act, 1937, the provisions of that Act in their application to building operations and works of engineering construction have effect as if any place where such works are carried on is a factory, and any person undertaking any such operation or work to which the Act applies is the occupier of the factory. Other adaptations and modifications may be made by Regulations made by the Secretary of State. This means, briefly, that as far as the administration of the Factories Act is concerned, a building operation or work of engineering construction is a factory, and all relevant Regulations can be enforced, the most common Regulations concerned being the Electricity Regulations, the Woodworking Machinery Regulations, and the Locomotive Regulations. (The relevant Sections of the Act, in particular the Electricity Regulations, are discussed in some detail in the paper.)

Lighting can be divided into two main categories: permanent (or semi-permanent) and portable. The first category is usual for general lighting around the site and in completed parts of the operation, and the second, as the name implies, for temporary use. In either case, the conditions under which lights will be used are rough, and the greatest care must be taken to provide suitable protection for the conductors, especially where a cable passes round corners or through steelwork. Wherever possible, it is considered essential that voltage should be reduced for all lighting purposes. There is a great risk with voltages at 230 volts A.C. and over, which disappears when there is a reduction below 125 volts A.C. It has been found that the most suitable arrangement is to provide conductors in circular tough rubber sheathing at 110 volts for the more permanent lights, and portable lamps on similar leads at 25 or 12½ volts. There is always a tendency to use wiring in VIR for portable lights; this protection is very vulnerable on any site and is quite unsuitable.

The lack of suitable lighting has been the cause of many serious accidents on building operations and works of engineering construction. With only a little thought and care during the planning stage of the work, most would have been eliminated. It is important that the question of the provision of adequate temporary lighting should receive a great deal of attention during the initial stages of any job. Not only is there a legal obligation to provide good standards but it is only too often dangerous not to. Many examples of such accidents are recorded and were referred to in the paper.

In concluding, Mr. Scott said that it is well known that one of the greatest difficulties in accident prevention is to make persons employed think for themselves. Whilst the foreman or agent should be held strictly responsible for faulty equipment being available for use the basic fault often lies in the lack of training and education in safety matters of both the supervisory staff and the workers.

Leicester Centre

The sessional meeting of the Leicester Centre, held on February 24, took the form of a street lighting forum. Those serving on the panel were: Mr. G. Mainwaring (lighting engineer), Mr. F. R. Grant (Public Lighting Dept., Leicester Corporation), Mr. D. W. Carter (Royal Society for Prevention of Accidents), and Mr. T. Cole (Automobile Association). The chairman was Mr. A. E. Bird.

Mr. Mainwaring dealt with the technicalities and design of street lighting and the available light sources. He also made reference to road surfaces suggesting that semi-matt and light-coloured surfaces were to be recommended.

Mr. F. R. Grant gave a review of the work of a street lighting department and committee procedure. He was conscious of the need to improve street lighting in the city and gave some indication of the Group A road lighting that had been done and the future programme under consideration. In dealing with Group B street lighting he said that the Department's aim was to convert all present gas lighting to electric within the next few years. The high bank rate and credit squeeze was the main reason why this conversion was not progressing as quickly as was desired.

Mr. Carter gave certain statistics on the accident rate and in stressing the importance of efficient street lighting in built-up areas, said that the balance of responsibility was still in the hands of the motorist.

Mr. T. Cole said that the Automobile Association was ever conscious of the need for good street lighting and in dealing with the ever-troublesome question of finance, said if the road fund had been used as it was originally intended there would be adequate money available to give this country a very much higher standard of street lighting than at present exists. On the question of economy Mr. Cole remarked that he considered that the enormous expenses incurred in hospital treatment to victims would be greatly reduced if motorists and pedestrians alike were given better seeing conditions.

Members of the audience took part in a most interesting discussion that followed and the conclusion was that every effort must be made to improve street lighting and thus reduce the appalling accident rate that occurs during the hours of darkness.

Birmingham Centre

The Annual General Meeting of the Birmingham Centre of the Illuminating Engineering Society held on the 28th February, 1958, in Birmingham, was a fitting occasion for a

paper by Mr. N. Boydell, a vice-president of the Society. Mr. Boydell dealt with "International Lighting Organisation," giving a clear and concise account of the origin and history of the associations and personalities who have played such essential parts in the necessary progress and work over the last sixty years. Mr. Boydell made reference to the growing co-operation in the international technical field with special mention of the International Electrotechnical Commission, and the International Commission on Illumination (the CIE). This latter organisation had twenty-six national committees as subscribing members and individual local representatives in countries where there were no national committees.

Giving a short account of the many assignments allocated by the Commission, Mr. Boydell in particular referred to the fundamentals of lighting, photometry and vision, light sources and operating accessories, theatre stage and street lighting, and lighting in schools and colleges. Mr. Boydell's account of the history of the CIE was very interesting indeed, from 1896 in the days of the International Congress of Electricians to 1955 when the last meeting was held in Zurich, previous meetings having been held in Paris, Geneva, The United States, England, Berlin and the Netherlands.

Development of expert discussion had advanced very rapidly in recent years, and at the moment the subjects under review included automobile headlights and signal lights, colour rendering, colorimetry, U.V. and I.R. radiation and measurement, and education in schools as typical examples.

Mr. Boydell made what could have been in less expert hands an extremely dry subject, very interesting, and this gave rise to several questions on the work he described.

A hearty vote of thanks to Mr. Boydell, proposed by Mr. Lovell and seconded by Mr. Bottrill, was warmly received.

Nottingham Centre

At the meeting of the Nottingham Centre on February 6 a lecture on "Light and Plant Growth" was given by Dr. Daphne Vince of Reading University.

During the winter months the rate of plant growth under glass is limited by the rate at which photosynthesis can take place in the low light intensity conditions prevailing at that time. The synthesis of dry matter and, consequently, the growth rate can be accelerated by supplementing the natural daylight with artificial light. Since artificial light is here being used to supplement deficiencies in natural daylight, a fairly high intensity must be achieved in order to have any appreciable effect on the rate of growth. Various types of lamp may be used, but to date the most successful has been the 400-watt high-pressure mercury lamp installed to irradiate an area of approximately 4 ft. x 3 ft. The early growth and fruiting of tomatoes and cucumbers may economically be stimulated in this way.

The effect of light on the form of the plant assumes importance when bulbs are forced, since the food reserves stored in the bulb during the previous summer are adequate for flowering without further photosynthesis during the forcing period. Bulbs may be forced in insulated dark structures more economically than in glasshouses because of the lowered fuel consumption in the former; under these conditions a small quantity of artificial light (about 10 lm/ft^2) must be supplied to control stem length and cause chlorophyll formation.

The relative length of day and night controls the pattern of growth in many plants. Among the processes influenced are flowering, the onset of dormancy in some woody species, the breaking of dormancy in some species, stem elongation, tuber formation, runner production and leaf shape. Of these the process of greatest interest in horticulture and offering the greatest possibilities of control with artificial light, is flowering. There are several groups of plants with respect to their flowering response to photoperiod (day-length). some (short-day plants) flower only when the days are shorter than a certain critical length, others (long-day plants) only when the days are sufficiently long, while a third group is not much affected. Most winter and autumn flowering plants belong to the short-day group and many summer flowering annuals are long-day plants. Only a very small quantity of light is required to bring about a photoperiodic response so that long-day plants can be made to flower, or short-day plants prevented from flowering by hanging 40 watt tungsten filament lamps over them for a few hours each night. The time of flowering of chrysanthemums can fairly readily be manipulated in this way and flowers are now reaching the market at all seasons of the year; the plants are flowered in the summer by giving artificial short days while, in the winter, artificial long days are given to obtain the desired length of stem before the plants are allowed to flower in response to the naturally occurring short days.

Artificial light thus finds several uses in horticulture and it seems likely that in the future existing techniques will be more widely adopted and new techniques developed for a bigger range of crop species. The development and improvement of light sources may be an important economic factor, while cheaper electricity would open up a wider prospect of use.

FORTHCOMING EVENTS

LONDON

April 1st
Conference on Factory Lighting. (At the Northampton College of Advanced Technology, St. John Street, E.C.1.)

April 15th
Sessional Meeting.—"Characteristics and Applications of Photoelectric Cells," by F. A. Benson. (At the Federation of British Industries, 21, Tothill Street, S.W.1.) 6 p.m.

May 11th-14th
Summer Meeting at Eastbourne.

CENTRES AND GROUPS

April 1st
TRANSVAAL.—Chairman's Address, by J. W. Barnard. (At Room 95, Public Library, Johannesburg.) 8 p.m.

April 2nd
EDINBURGH.—Annual General Meeting. (At the Y.M.C.A. Social Room, 14, South Saint Andrew Street, Edinburgh.) 6.15 p.m.

April 10th
NOTTINGHAM.—"Display and Small Store Lighting," by J. R. Just. (At the Demonstration Theatre, East Midlands Electricity Board, Smithy Row, Nottingham.) 6 p.m. Refreshments 5.30 p.m.

April 11th
LEEDS.—Annual General Meeting and Social Evening. (At the Mansion Hotel, Roundhay Park, Leeds 8.) 7 p.m.

April 14th
SHEFFIELD.—Annual General Meeting. "Contribution of Plastics to Lighting Practice," by W. E. Harper. (At the Grand Hotel, Sheffield.) 6.30 p.m.

April 15th
GLOUCESTER AND CHELTENHAM.—Annual General Meeting.
LIVERPOOL.—Annual General Meeting. (At the Committee Rooms of the Liverpool Passenger Transport Office, 24, Hatton Garden, Liverpool, 3.) 6 p.m.

April 17th
MANCHESTER.—Annual General Meeting and Members' Night. (At the Demonstration Theatre, N.W. Electricity Board, Town Hall Manchester, 2.) 6 p.m. Light refreshments from 5.30 p.m.

April 21st
BATH AND BRISTOL.—Annual General Meeting. (At the South Western Electricity Board, Bath.) 7 p.m.
LEICESTER.—Annual General Meeting. (At the Bell Hotel.) 7 p.m.

April 25th
BIRMINGHAM.—"Light and Colour." (At Regent House, St. Phillip's Place, Colmore Row, Birmingham.) 6 p.m.

POSTSCRIPT By 'Lumeritas'

YET another rearguard action has been fought in the battle of the lamp-posts. This time the doughty opponent of the "concreties" was not a past president of the Royal Academy, but that grand old man of the stage, A. E. Matthews. Despite the cold and the snow, he sat over a hole dug outside his cottage to prevent it from being used for the erection of the last of 250 concrete lamp-posts in a new installation at Bushey Heath. "Matty" lost the battle, for the local Council subsequently determined to proceed with the erection of this last post. Ah well—

> You see them here, you see them there:
> Some Councils put them everywhere.
> If they don't please they lower costs,
> Those demn'd concrety lampenposts!

(apologies to the late Baroness Orczy, but none for the poetic licence taken in the last line!)

And writing of lamp-posts reminds me that, included in a recently published Ministry of Housing list of buildings, etc., of special architectural or historic interest—which are considered worthy of preservation—is one lamp-post situated in Waterloo Place! I believe the chosen specimen is of late Georgian vintage.

AS I predicted last month, the Siemens Centenary Lecture given by Dr. John N. Aldington on March 5 was of great interest. The very large audience present in the Central Hall at Westminster obviously enjoyed listening to the story of the Siemens Brothers enterprise, so ably told by the lecturer and pointed by numerous demonstrations, including a well-timed transatlantic telephone conversation over the recently laid submarine telephone cable. On the following night a mammoth dinner party was given by Siemens Edison Swan at Grosvenor House with Dr. Aldington in the chair. Incidentally, what egregious nonsense it is for some tycoons to profess that men who have had a training in science, and are well acquainted with the technical aspects of a manufacturing organisation, are less likely to make good administrators than are those who lack these advantages. This hoary fallacy was propounded by a business magnate on the BBC Brains Trust only a few days after the Siemens centenary dinner where, not only was this fallacy belied in the person of the chairman himself, but in the persons of about half of the other sixty occupants of the top table, as well as by many of the 1,200 guests present. This may not be the place to enlarge upon this topic, but, thank goodness, the top administrators in the lighting industry are not preferentially recruited from the "know nothing about the technical side" fraternity!

NOT long ago the first international symposium on photoperiodism in plants and animals was held in Tennessee. For the benefit of any reader who may be unacquainted with the term "photoperiodism" let me explain that it relates to the responses of living organisms to different durations of light. To periodic variations of light such as occur when electric light sources are operated on 50-cycle A.C. supplies there are no known responses in most animals of the human species and, so far as I know, none in other animals. But photoperiodism is concerned with much slower rhythms, in which the light period is, e.g., of the "short-day" or "long-day" duration. There are short-day and long-day plants, so-called because of their responses to the length of day, and in the life of insects and various vertebrates photoperiodism is a factor of no little importance—one familiar example being the migration of birds. By means of artificial lighting photoperiodic responses can be, and are being, evoked "out of turn" in the service of man. Obviously, photoperiodic perception is not mediated by eyes in plants though it generally is in vertebrates—including man, who now regularly extends "daylength" apparently without any marked effects upon himself. Yet is he really unresponsive to natural daylength? Increasing daylength in the Spring—which is now "officially" with us—induces courtship and breeding in carp and similar fishes—as well as in birds, and, if the poet speaks truly, "In the Spring the young man's fancy lightly turns to thoughts of love"!

I AM told that last month's Editorial on the subject of independent lighting consultants has brought to the Editor a letter from one such consultant with mention of another. The letter suggests that a register of independent consultants might be kept to which reference could be made by prospective clients. Whether such a register should be kept by the IES or by *Light and Lighting* is not clear, but I believe that, from time to time, both "bodies" receive requests for the name of an independent consultant, and that these requests are met, if they can be, from what information is then available. It is a tradition that consultants do not, and in some professions must not, advertise. So, anyone who desires their services may not now find it easy to discover if such services are available. Even the existence of the IES is not universally known and, by some strange oversight, not all the reference books giving lists of Societies make mention of the IES. Regrettably, too, the existence of this journal is not as widely known as it deserves to be, though it is steadily becoming more widely distributed. Anyway, I am sure the Editor will be glad to know of all independent lighting consultants—this is something a journal like this ought to know; but how, unless it is told?

THIS month's snippet. A certain parish Council in Cambridgeshire has been encouraging local residents to provide their own street lighting. Some of the residents have agreed to buy their own lights if the Council will maintain them. The offer has been accepted. Almost a "flashback" to the XVI century when, in London, anyway, every householder "caused a substantial lanthorn to be hanged without their Doors" to light the streets in the winter months.

The Men's Wear department of Messrs. Curl Bros., Norwich. Lighting planned in collaboration with the architects, H. F. Scott and Sons. Installations by Mann, Egerton and Co. Ltd.

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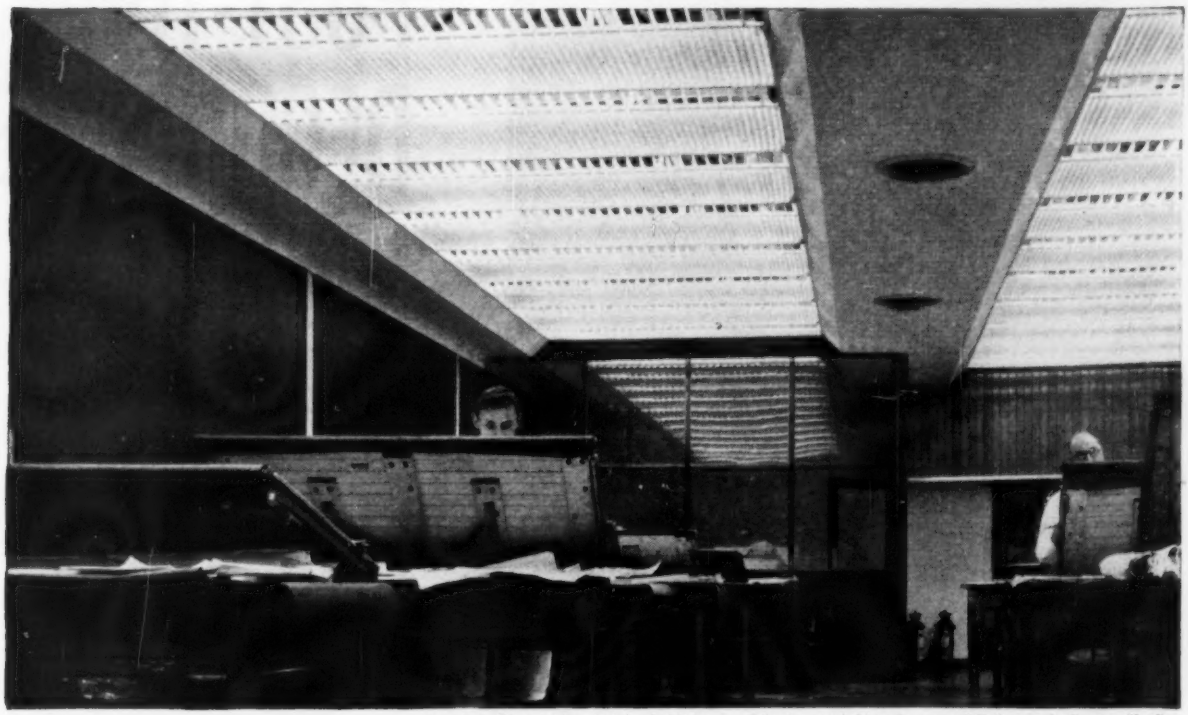

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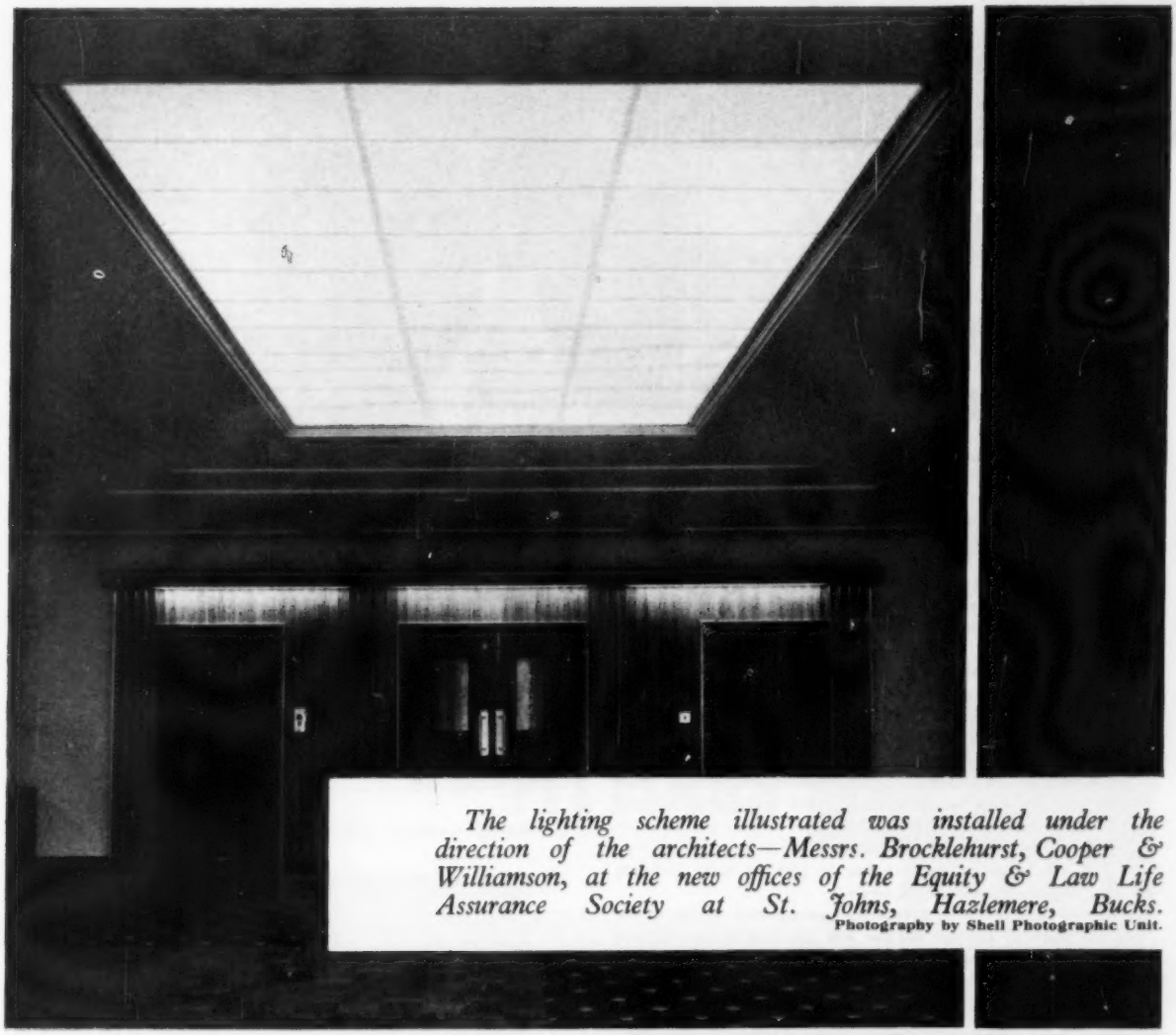

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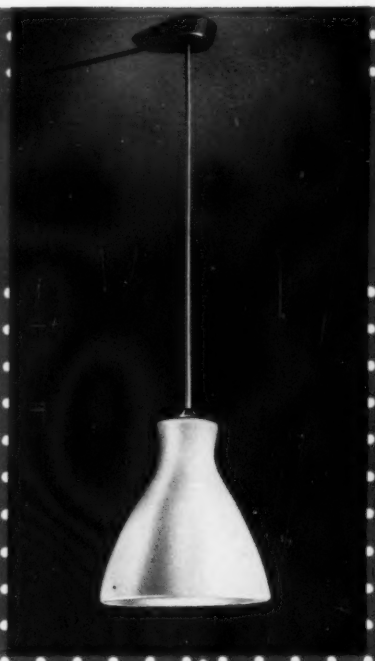

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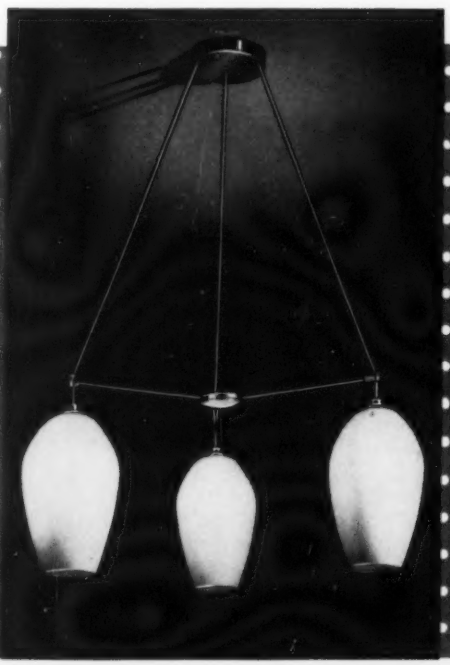

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